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PROCEEDINGS

OF

The American Association

FOR THE

ADVANCEMENT OF SCIENCE,

FIFTY-EIGHTH MEETING

HELD AT

CHICAGO, ILLINOIS,

DECEMBER, 1907,–JANUARY, 1908.

PUBLISHED BY THE PERMANENT SECRETARY,

1908.

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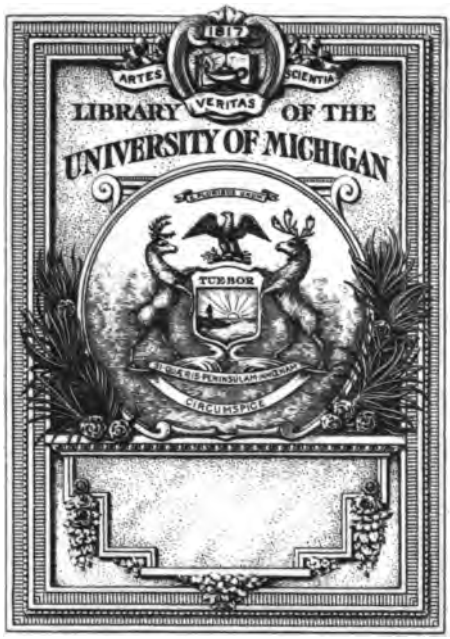

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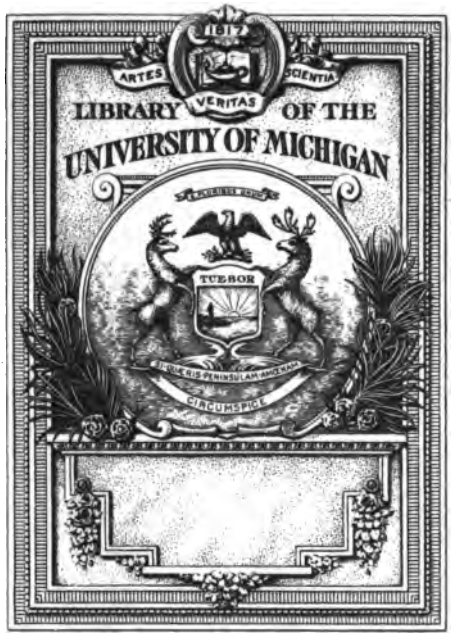

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EDITED BY

L. O. HOWARD,

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*All Committees are expected to present their reports to the COUNCIL not later than the third day of the meeting. Committees sending their reports to the Permanent Secretary one month before a meeting can have them printed for use at the meeting.

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MEETINGS AND OFFICERS OF THE ASSOCIATION OF AMERICAN GEOLOGISTS AND NATURALISTS.

Meeting.	Date.	Place.	Chairman.	Secretary.	Assistant Secretary.	Treasurer.
1st	April 2, 1840,	Philadelphia,	Edw. Hitchcock,*	L. C. Beck,*		
2d	April 5, 1841,	Philadelphia,	Benj. Silliman,*	L. C. Beck,*	B. Silliman, Jr.,* C. B. Trego,*	
3d	April 25, 1842,	Boston,	S. G. Morton,*	C. T. Jackson,*	J. D. Whitney,* M. B. Williams,*	
4th	April 26, 1843,	Albany,	Henry D. Rogers,*	B. Silliman, Jr.,*		John Locke.*
5th	May 8, 1844,	Washington,	John Locke,*	B. Silliman, Jr.,* O. P. Hubbard,		Douglas Houghton.*
6th	April 30, 1845,	New Haven,	Wm. B. Rogers,*	B. Silliman, Jr.,* J. Law. Smith,*		Douglas Houghton.*
7th	Sept. 2, 1846,	New York,	C. T. Jackson,*	B. Silliman, Jr.,*		E. C. Herrick.*
8th	Sept. 20, 1847,	Boston,	Wm B. Rogers,*†	Jeffries Wyman,*		B. Silliman, Jr.*

* Deceased.

† Professor Rogers, as chairman of this last meeting, called the first meeting of the new Association to order and presided unt l it was fully organized by the adoption of a constitution. As he was thus the first presiding officer of the new Association, it was directed at the Hartford meeting that his name be placed at the head of the Past Presidents of the American Association for the Advancement of Science.

Meetings	Place	Date	Members in attendance	Number of members
1	Philadelphia	Sept. 20, 1848	?	461
2	Cambridge	Aug. 14, 1849	?	540
3	Charleston	Mar. 12, 1850	?	622
4	New Haven	Aug. 19, 1850	?	704
5	Cincinnati	May 5, 1851	87	800
6	Albany	Aug. 19, 1851	194	769
7	Cleveland	July 28, 1853	?	940
8	Washington	April 26, 1854	168	1004
9	Providence	Aug. 15, 1855	166	605
10	2d Albany	Aug. 20, 1856	381	722
11	Montreal	Aug. 12, 1857	351	946
12	Baltimore	April 28, 1858	190	962
13	Springfield	Aug. 3, 1859	190	862
14	Newport	Aug. 1, 1860	135	644
15	Buffalo	Aug. 15, 1866	79	637
16	Burlington	Aug. 21, 1867	73	415
17	Chicago	Aug. 5, 1868	259	686
18	Salem	Aug. 18, 1869	244	511
19	Troy	Aug. 17, 1870	188	536
20	Indianapolis	Aug. 16, 1871	196	668
21	Dubuque	Aug. 15, 1872	164	610
22	Portland	Aug. 20, 1873	195	670
23	Hartford	Aug. 12, 1874	224	722
24	Detroit	Aug. 11, 1875	165	807
25	2d Buffalo	Aug. 23, 1876	215	867
26	Nashville	Aug. 29, 1877	173	953
27	St. Louis	Aug. 21, 1878	134	962
28	Saratoga	Aug. 27, 1879	256	1030
29	Boston	Aug. 25, 1880	997	1555
30	2d Cincinnati	Aug. 17, 1881	500	1699
31	2d Montreal	Aug. 23, 1882	937	1922
32	Minneapolis	Aug. 15, 1883	328	2033
33	2d Philadelphia	Sept. 3, 1884	1261*	1981
34	Ann Arbor	Aug. 26, 1885	364	1956
35	3d Buffalo	Aug. 18, 1886	445	1886
36	New York	Aug. 10, 1887	729	1956
37	2d Cleveland	Aug. 14, 1888	342	1964
38	Toronto	Aug. 26, 1889	424	1952
39	2d Indianapolis	Aug. 19, 1890	364	1944
40	2d Washington	Aug. 19, 1891	653†	2054
41	Rochester	Aug. 17, 1892	456	2037
42	Madison	Aug. 17, 1893	290	1939
43	Brooklyn	Aug. 15, 1894	488	1802
44	2d Springfield	Aug. 28, 1895	368	1913
45	4th Buffalo	Aug. 24, 1896	333	1890
46	2d Detroit	Aug. 9, 1897	283‡	1782
47	2d Boston	Aug. 22, 1898	903	1729
48	Columbus	Aug. 21, 1899	353	1721
49	2d New York	June 25, 1900	434	1925
50	Denver	Aug. 24, 1901	311	2703
51	Pittsburg	June 28 to July 3, 1902	435	3473
52	3d Washington	Dec. 27, 1902, to Jan. 2, 1903	975	3596
53	2d St. Louis	Dec. 28, 1903, to Jan. 2, 1904	385	4075
54	3d Philadelphia	Dec. 27–31, 1904	890	4175
55	New Orleans	Dec. 28, 1905, to Jan. 2, 1906	233	4357
56	Ithaca	June 28 to July 3, 1906.	232	4425
57	3d New York	Dec. 27, 1906, to Jan. 2, 1907.	934	4498
58	2d Chicago	Dec. 30, 1907, to Jan. 4, 1908.	725	4727

* Including 303 Members of the British Association and 9 other foreign guests.
† Including 24 Foreign Honorary Members for the meeting.
‡ Including 15 Foreign Honorary Members and Associates for the meeting.

Officers of the Meetings of the Association.

[The number before the name is that of the meeting; the year of the meeting follows the name; the asterisk after a name indicates that the member is deceased.]

PRESIDENTS.

1. WM. B. ROGERS,* 1848.
   W. C. REDFIELD,* 1848.
2. JOSEPH HENRY,* 1849.
3. A. D. BACHE,* March meeting, 1850, in the absence of JOSEPH HENRY.*
4. August meeting, 1850.
5. May meeting, 1851.
6. LOUIS AGASSIZ,* August meeting, 1851.
   (No meeting in 1852.)
7. BENJAMIN PIERCE,* 1853.
8. JAMES D. DANA,* 1854.
9. JOHN TORREY,* 1855.
10. JAMES HALL,* 1856.
11. ALEXIS CASWELL,* 1857, in place of J. W. BAILEY,* deceased. 1858, in the absence of JEFFRIES WYMAN.*
12.
13. STEPHEN ALEXANDER,* 1859.
14. ISAAC LEA,* 1860.
    (No meetings for 1861–65.)
15. F. A. P. BARNARD,* 1866.
16. J. S. NEWBERRY,* 1867.
17. B. A. GOULD,* 1868.
18. J. W. FOSTER,* 1869.
19. T. STERRY HUNT,* 1870, in the absence of WM. CHAUVENET.*
20. ASA GRAY,* 1871.
21. J. LAWRENCE SMITH,* 1872.
22. JOSEPH LOVERING,* 1873.
23. J. L. LECONTE,* 1874.
24. J. E. HILGARD,* 1875.
25. WILLIAM B. ROGERS,* 1876.
26. SIMON NEWCOMB, 1877.
27. O. C. MARSH,* 1878.
28. G. F. BARKER, 1879.
29. LEWIS H. MORGAN,* 1880.
30. G. J. BRUSH, 1881.
31. J. W. DAWSON, 1882.
32. C. A. YOUNG, 1883.
33. J. P. LESLEY,* 1884.
34. H. A. NEWTON,* 1885.
35. EDWARD S. MORSE, 1886.
36. S. P. LANGLEY,* 1887.
37. J. W. POWELL,* 1888.
38. T. C. MENDENHALL, 1889.
39. G. LINCOLN GOODALE, 1890.
40. ALBERT B. PRESCOTT,* 1891.
41. JOSEPH LECONTE,* 1892.
42. WILLIAM HARKNESS,* 1893.
43. DANIEL G. BRINTON,* 1894.
44. E. W. MORLEY, 1895.
45. EDWARD D. COPE,* 1896. THEODORE GILL, as senior vice-president acted after the death of Prof. COPE.
46. WOLCOTT GIBBS, 1897, absent. W J MCGEE, Acting President.
47. F. W. PUTNAM, 1898.
48. EDWARD ORTON,* 1899. GROVE K. GILBERT, elected by the General Committee December, 1899. to fill the vacancy caused by the death of Prof. ORTON.
49. R. S. WOODWARD, 1900.

50. C. S. MINOT, 1901.
51. ASAPH HALL,* 1902.
52. IRA REMSEN, 1903.
53. CARROLL D. WRIGHT, 1904.
54. W. G. FARLOW, 1905.
55. C. M. WOODWARD, 1906.
56. W. H. WELCH, 1906.
57. W. H. WELCH, 1907.
58. E. L. NICHOLS, 1908.

VICE-PRESIDENTS.

There were no Vice-Presidents until the 11th meeting, when there was a single Vice-President for each meeting. At the 24th meeting, the Association met in Sections A and B, each presided over by a Vice-President. At the 31st meeting nine sections were organized, each with a Vice-President as its presiding officer. In 1886 Section G (Microscopy) was given up. In 1892, Section F was divided into F, Zoology; G, Botany.

1857–1874.

11. ALEXIS CASWELL,* 1857, acted as President.
12. JOHN E. HOLBROOK,* 1858, not present.
13. EDWARD HITCHCOCK,* 1859.
14. B. A. GOULD,* 1860.
15. B. A. GOULD,* 1866, in the absence of R. W GIBBES.
16. WOLCOTT GIBBS, 1867.
17. CHAS. WHITTLESEY,* 1868.
18. OGDEN N. ROOD, 1869.
19. T. STERRY HUNT,* 1870, acted as President.
20. G. F. BARKER, 1871.
21. ALEX. WINCHELL,* 1872.
22. A. H. WORTHEN,* 1873, not present.
23. C. S. LYMAN,* 1874.

1875–1881.

Section A.—Mathematics, Physics, and Chemistry.

24. H. A. NEWTON,* 1875.
25. C. A. YOUNG, 1876.
26. R. H. THURSTON,* 1877, in the absence of E. C. PICKERING.
27. R. H. THURSTON,* 1878.
28. S. P. LANGLEY,* 1879.
29. ASAPH HALL,* 1880.
30. WM. HARKNESS,* 1881, in the absence of A. M. MAYER.*

Section B.—Natural History.

24. J. W. DAWSON, 1875.
25. EDWARD S. MORSE, 1876.
26. O. C. MARSH,* 1877.
27. AUG R. GROTE. 1878.
28. J. W. POWELL,* 1879.
29. ALEX. AGASSIZ, 1880.
30 EDWARD T. COX, 1881, in the absence of GEORGE ENGELMANN.*

CHAIRMEN OF SUBSECTIONS, 1875–1881.

Subsection of Chemistry.

24. S. W. JOHNSON, 1875.
25. G. F. BARKER, 1876.
26. N. T. LUPTON,* 1877.
27. F W. CLARKE, 1878.
28. F. W. CLARKE, 1879, in the absence of IRA REMSEN.
29. J. M. ORDWAY, 1880.
30. G. C. CALDWELL, 1881, in the absence of W. R. NICHOLS.*

Subsection of Microscopy.

25. R. H. WARD, 1876.
26 R. H. WARD, 1877.
27. R. H. WARD, 1878, in the absence of G. S. BLACKIE.*
28. E. W. MORLEY, 1879.
29. S. A. LATTIMORE, 1880.
30. A. B. HERVEY, 1881.

Subsection of Anthropology.

24. LEWIS H. MORGAN,* 1875.
25. LEWIS H. MORGAN,* 1876.
26. DANIEL WILSON,* 1877, not present
27. United with Section B.
28. DANIEL WILSON,* 1879.
29. J. W. POWELL,* 1880.
30. GARRICK MALLERY,* 1881.

Subsection of Entomology.

30. J. G. MORRIS,* 1881.

VICE-PRESIDENTS OF SECTIONS, 1882–

Section A.—Mathematics and Astronomy.

31. W. A. ROGERS,* 1882, in the absence of WM. HARKNESS.*
32. W. A. ROGERS,* 1883.
33. H. T. EDDY, 1884.
34. WM. HARKNESS,* 1885, in the absence of J. M. VAN VLECK.
35. J. W. GIBBS,* 1886.
36. J. R. EASTMAN, 1887, in place of W. FERREL,* res'd.
37. ORMOND STONE, 1888.
38. R. S. WOODWARD, 1889.
39. S. C. CHANDLER, 1890.
40. E. W. HYDE, 1891.
41. J. R. EASTMAN, 1892.
42. C. L. DOOLITTLE, 1893.
43. { G. C. COMSTOCK, 1894. EDGAR FRISBY, 1894.
44. EDGAR FRISBY, 1895, in place of E. H. HOLDEN, resigned.
45. ALEX. MACFARLANE, 1896, in place of WM. E. STORY, resigned.
46. W. W. BEMAN, 1897.
47. E. E. BARNARD, 1898.
48. ALEX. MACFARLANE, 1899.
49. ASAPH HALL, JR., 1900.
50. JAMES MACMAHON, 1901.
51. G. W. HOUGH, 1902.
52. GEORGE BRUCE HALSTED, 1903.
53. O. H. TITTMANN, 1904.
54. ALEXANDER ZIWET, 1905.
55. ALEXANDER ZIWET, 1906, in the absence of W. S. EICHELBERGER.
56. EDWARD KASNER, 1906.
57. EDWARD KASNER, 1907.
58. E. O. LOVETT, 1908.

Section B.—Physics.

31. T. C. MENDENHALL, 1882.
32. H. A. ROWLAND,* 1883.

VICE-PRESIDENTS OF SECTIONS, CONTINUED.

33. J. TROWBRIDGE, 1884.
34. S. P. LANGLEY,* 1885, in place of C. F. BRACKETT, res'd.
35. C. F. BRACKETT, 1886.
36. W. A. ANTHONY, 1887.
37 A. A. MICHELSON, 1888.
38. H. S. CARHART, 1889.
39. CLEVELAND ABBE, 1890.
40. F. E. NIPHER, 1891.
41. B. F. THOMAS, 1892.
42. E. L. NICHOLS, 1893.
43. WM. A. ROGERS, 1894.
44. W. LECONTE STEVENS, 1895.
45. CARL LEO MEES, 1896.
46. CARL BARUS, 1897.
47. F. P. WHITMAN, 1898.
48. ELIHU THOMSON, 1899.
49. ERNEST MERRITT, 1900.
50. D. B. BRACE,* 1901.
51. W. S. FRANKLIN, 1902.
52. ERNEST F. NICHOLS, 1903.
53. E. H. HALL, 1904.
54. WM. F. MAGIE, 1905.
55. HENRY CREW, 1906.
56. W. C. SABINE, 1906.
57. W. C. SABINE, 1907.
58. D. C. MILLER, 1908.

Section C.—Chemistry.

31. H. C. BOLTON,* 1882.
32. E. W. MORLEY, 1883.
33. J. W. LANGLEY, 1884.
34. N. T. LUPTON,* 1885, in the absence of W. R. NICHOLS.
35. H. W. WILEY, 1886.
36. A. B. PRESCOTT,* 1887.
37. C. E. MUNROE, 1888.
38. W. L. DUDLEY, 1889.
39. R. B. WARDER, 1890.
40. R. C. KEDZIE, 1891.
41. ALFRED SPRINGER, 1892.
42. EDWARD HART, 1893.
43. T. H. NORTON, 1894.
44. WM. MCMURTRIE, 1895.
45. W. A. NOYES, 1896.
46. W. P. MASON, 1897.
47. EDGAR F. SMITH, 1898.
48. F. P. VENABLE, 1899.
49. JAS. LEWIS HOWE, 1900.
50. JOHN H. LONG, 1901.
51. H. A. WEBER, 1902.
52. CHARLES BASKERVILLE, 1903.
53. W. D. BANCROFT, 1904.
54. L. P. KINNICUTT, 1905.
55. L. P. KINNICUTT, 1906, in absence of C. F. MABERY.
56. CLIFFORD RICHARDSON, 1906.
57. CLIFFORD RICHARDSON, 1907.
58. H. P. TALBOT, 1908.

Section D.—Mechanical Science and Engineering.

31. W. P. TROWBRIDGE,* 1882.
32. DEVOLSON WOOD, 1883, absent, but place was not filled.
33. R. H. THURSTON,* 1884.
34. J BURKITT WEBB, 1885.
35 O. CHANUTE, 1886.
36. E. B. COXE, 1887.
37. C. J. H. WOODBURY, 1888.
38. JAMES E. DENTON, 1889.
39. JAMES E. DENTON, 1890, in place of A. BEARDSLEY, absent.
40. THOMAS GRAY, 1891.
41. J. B JOHNSON, 1892.
42. S. W ROBINSON, 1893.
43. MANSFIELD MERRIMAN, 1894.
44. WILLIAM KENT, 1895.
45. FRANK O. MARVIN, 1896.
46. JOHN GALBRAITH, 1897.
47. JOHN GALBRAITH, 1898, in the absence of M. E. COOLEY.
48. STORM BULL, 1899.
49. JOHN A. BRASHEAR, 1900.
50. H. S. JACOBY, 1901.

VICE-PRESIDENTS OF SECTIONS, CONTINUED.

51. J. J. FLATHER, 1902.
52. CLARENCE A. WALDO, 1903.
53. C. M. WOODWARD, 1904.
54. C. M. WOODWARD, 1905, in the absence of D. S. JACOBUS.
55. F. W. MCNAIR, 1906.
56. W. R. WARNER, 1906.
57. W. R. WARNER, 1907.
58. O. H. LANDRETH, 1908.

Section E.—Geology and Geography.

31. E. T. COX, 1882.
32. C. H. HITCHCOCK, 1883.
33. N. H. WINCHELL, 1884.
34. EDWARD ORTON,* 1885.
35. T. C. CHAMBERLIN, 1886.
36. G. K. GILBERT, 1887.
37. GEORGE H. COOK,* 1888.
38. CHARLES A. WHITE, 1889.
39. JOHN C. BRANNER, 1890.
40. J. J. STEVENSON, 1891.
41. H. S. WILLIAMS, 1892.
42. CHARLES D. WALCOTT, 1893.
43. SAMUEL CALVIN, 1894.
44. JED HOTCHKISS, 1895.
45. B. K EMERSON, 1896.
46. { I. C. WHITE, 1897. / E. W. CLAYPOLE,* 1897.
47. H. L FAIRCHILD, 1898.
48. J. F. WHITEAVES, 1899
49. J. F. KEMP, 1900.
50. C. R. VAN HISE, 1901.
51. JOSEPH A. HOLMES, 1902, in the absence of O. A. DERBY.
52. WM. M. DAVIS, 1903.
53. I. C. RUSSELL, 1904.
54. EUGENE A. SMITH, 1905.
55. WM. NORTH RICE, 1906.
56. A. C. LANE, 1906.
57 A. C. LANE, 1907.
58. J. P. IDDINGS, 1908.

Section F.—Biology, 1882–1892.

31. W. H. DALL, 1882.
32. W. J. BEAL, 1883.
33. E. D. COPE,* 1884.
34. T. J. BURRILL, 1885, in the absence of B. G. WILDER.
35. H. P. BOWDITCH, 1886.
36. W. G. FARLOW, 1887.
37. C. V. RILEY,* 1888.
38. GEORGE L. GOODALE, 1889.
39. C. S. MINOT, 1890.
40. J. M. COULTER, 1891.
41. S. H. GAGE, 1892.

Section F.—Zoology.

42. HENRY F. OSBORN, 1893.
43. J. A. LINTER,* 1894, in place of S. H. SCUDDER, res'd.
44. L. O. HOWARD, 1895, in place of D. S. JORDAN, res'd.
45. THEO. GILL, 1896.
46. L. O. HOWARD, 1897, in place of G. BROWN GOODE,* deceased.
47. A. S. PACKARD,* 1898.
48. S. H. GAGE, 1899.
49. C. B. DAVENPORT, 1900.
50. D. S. JORDAN, 1901.
51. E. L. MARK, 1902, in the absence of C. C. NUTTING.
52. C. W. HARGITT, 1903.
53. E. L. MARK, 1904.
54. C. HART MERRIAM, 1905.
55. H. B WARD, 1906.
56. E. G. CONKLIN, 1906.
57. E. G. CONKLIN, 1907.
58. E. B. WILSON, 1908.

Section G.—Microscopy, 1882–85.

31. A. H. TUTTLE, 1882.
32. J. D. COX, 1883.

VICE-PRESIDENTS OF THE SECTIONS, CONTINUED.

33. T. G. WORMLEY,* 1884.
34. S. H. GAGE, 1885.
(Section united with F in 1886.)

Section G.—Botany.

42. CHARLES E. BESSEY, 1893.
43. { L. M. UNDERWOOD, 1894.
{ C. E. BESSEY, 1894.
44. J. C. ARTHUR, 1895.
45. N. L. BRITTON, 1896.
46. G. F. ATKINSON, 1897.
47. W. G. FARLOW, 1898.
48. C. R. BARNES, 1899.
49. W. TRELEASE, 1900.
50. B. T. GALLOWAY, 1901.
51. C. E. BESSEY, 1902, in the absence of D. H. CAMPBELL.
52. F. V. COVILLE, 1903.
53. T. H. MACBRIDE, 1904.
54. B. L. ROBINSON, 1905.
55. B. L. ROBINSON, 1906, in the absence of ERWIN F. SMITH.
56. D. T. MACDOUGALL, 1906.
57. D. T. MACDOUGALL, 1907.
58. C. E. BESSEY, 1908.

Section H.—Anthropology and Psychology.

31. ALEX. WINCHELL,* 1882.
32. OTIS T. MASON, 1883.
33. EDWARD S. MORSE, 1884.
34. J. OWEN DORSEY,* 1885, in the absence of W. H. DALL.
35. HORATIO HALE,* 1886.
36. D. G. BRINTON,* 1887.
37. CHARLES C. ABBOTT, 1888.
38. GARRICK MALLERY,* 1889.
39. FRANK BAKER, 1890.
40. JOSEPH JASTROW, 1891.
41. W. H. HOLMES, 1892.
42. J. OWEN DORSEY,* 1893.
43. FRANZ BOAS, 1894.
44. F. H. CUSHING,* 1895.
45. ALICE C. FLETCHER, 1896.
46. W J MCGEE, 1897.
47. J. MCK. CATTELL, 1898.
48. THOMAS WILSON,* 1899.
49. A. W. BUTLER, 1900.
50. J. WALTER FEWKES, 1901.
51. STEWART CULIN, 1902.
52. GEO. A. DORSEY, 1903.
53. M. H. SAVILLE, 1904.
54. WALTER HOUGH, 1905.
55. GEORGE GRANT MCCURDY, 1906.
56. HUGO MUNSTERBERG, 1906.
57. A. L. KROEBER, 1907.
58. FRANZ BOAS, 1908.

Section I.—Social and Economic Science.

31. E. B. ELLIOTT,* 1882.
32. FRANKLIN B. HOUGH,* 1883.
33. JOHN EATON,* 1884.
34. EDWARD ATKINSON, 1885.
35. JOSEPH CUMMINGS,* 1886.
36. H. E. ALVORD,* 1887.
37. CHARLES W. SMILEY, 1888.
38. CHARLES S. HILL, 1889.
39. J. RICHARDS DODGE, 1890.
40. EDMUND J. JAMES, 1891.
41. L. F. WARD, 1892, in place of S. D. HORTON,* resigned.
42. WILLIAM H. BREWER, 1893.
43. HENRY FARQUHAR, 1894.
44. B. E. FERNOW, 1895.
45. W. L. LAZENBY, 1896.
46. R. T. COLBURN, 1897.
47. ARCHIBALD BLUE, 1898
48. MARCUS BENJAMIN, 1899.
49. MARCUS BENJAMIN, 1900, in the absence of C. M. WOODWARD.

VICE-PRESIDENTS OF THE SECTIONS, CONTINUED.

50. JOHN HYDE, 1901.
51. JOHN HYDE, 1902, in the absence of CARROLL D. WRIGHT.
52. H. T. NEWCOMB, 1903.
53. SIMEON E. BALDWIN, 1904.
54. MARTIN A. KNAPP, 1905.
55. IRVING FISHER, 1906.
56. CHAS. A. CONANT, 1906.
57. CHAS. A. CONANT, 1907.
58. JOHN FRANKLIN CROWELL, 1908.

Section K.—Physiology and Experimental Medicine.

51. W. H. WELCH, 1902.
52. W. H. WELCH, 1903.
53. H. P. BOWDITCH, 1904.
54. H. P. BOWDITCH, 1905.
55. ALEXANDER C. ABBOTT, 1906, in the absence of W. T. SEDGWICK.
56. SIMON FLEXNER, 1906.
57. SIMON FLEXNER, 1907.
58. LUDVIG HEKTOEN, 1908.

Section L.—Education.

58. ELMER BROWN, 1908.

SECRETARIES.

General Secretaries, 1848–

1. WALTER R. JOHNSON,* 1848.
2. E. N. HORSFORD,* 1849, in the absence of JEFFRIES WYMAN.*
3. L. R. GIBBS, 1850, in the absence of E. C. HERRICK.*
4. E. C. HERRICK,* 1850.
5. WM. B. ROGERS,* 1851, in the absence of E. C. HERRICK.*
6. WM. B. ROGERS,* 1851.
7. S. ST. JOHN,* 1853, in the absence of J. D. DANA.*
8. J. LAWRENCE SMITH,* 1854.
9. WOLCOTT GIBBS, 1855.
10. B. A. GOULD,* 1856.
11. JOHN L. LECONTE,* 1857.
12. W. M. GILLESPIE,* 1858, in the absence of WM. CHAUVENET.*
13. WM. CHAUVENET,* 1859.
14. JOSEPH LECONTE,* 1860.
15. ELIAS LOOMIS,* 1866, in the absence of W. P. TROWBRIDGE.*
16. C. S. LYMAN,* 1867.
17. SIMON NEWCOMB, 1868, in the absence of A. P. ROCKWELL.
18. O. C. MARSH,* 1869.
19. F. W. PUTNAM, 1870, in the absence of C. F. HARTT.*
20. F. W. PUTNAM, 1871.
21. EDWARD S. MORSE, 1872.
22. C. A. WHITE, 1873.
23. A. C. HAMLIN, 1874.
24. S. H. SCUDDER, 1875.
25. T. C. MENDENHALL, 1876.
26. AUG. R. GROTE, 1877.
27. H. C. BOLTON,* 1878.
28. H. C. BOLTON,* 1879, in the absence of GEORGE LITTLE.
29. J. K. REES, 1880.
30. C. V. RILEY,* 1881.
31. WILLIAM SAUNDERS, 1882.
32. J. R. EASTMAN, 1883.
33. ALFRED SPRINGER, 1884.
34. C. S. MINOT, 1885.
35. S. G. WILLIAMS,* 1886.
36. WILLIAM H. PETTEE, 1887.
37. JULIUS POHLMAN, 1888.
38. C. LEO MEES, 1889.

SECRETARIES, CONTINUED.

39. H. C. BOLTON,* 1890.
40. H. W. WILEY, 1891.
41. A. W. BUTLER, 1892.
42. T. H. NORTON, 1893.
43. H. L. FAIRCHILD, 1894.
44. JAS. LEWIS HOWE, 1895.
45. CHARLES R. BARNES, 1896.
46. ASAPH HALL, JR., 1897.
47. J. MCMAHON, 1898, in place of D.S. KELLICOTT,* deceased.
48. F. BEDELL, 1899.
49. CHAS. BASKERVILLE, 1900.
50. JOHN M. COULTER, 1901, in the absence of WILLIAM HALLOCK.
51. D. T. MACDOUGAL, 1902.
52. HENRY B. WARD, 1903.
53. C. W. STILES, 1904.
54. CHARLES S. HOWE, 1905.
55. C. A. WALDO, 1906.
56. JOHN F. HAYFORD, 1906.
57. JOHN F. HAYFORD, 1907.
58. F. W. MCNAIR, 1908.

Permanent Secretaries, 1851–

5–7. SPENCER F. BAIRD,* 1851–4
8–17. JOSEPH LOVERING,* 1854–68.
18. F. W. PUTNAM, 1869, in the absence of J. LOVERING.*
19–21. JOSEPH LOVERING,* 1870–73.
22–46. F. W. PUTNAM, 1873–98.
47–54. L. O. HOWARD, 1898–05.
55–60. L. O. HOWARD, 1906–10.

Assistant General Secretaries, 1882–1887.

31. J. R. EASTMAN, 1882.
32. ALFRED SPRINGER, 1883.
33. C. S. MINOT, 1884, in the absence of E. S. HOLDEN.
34. S. G. WILLIAMS,* 1885, in the absence of C. C. ABBOTT.
35. W. H. PETTEE, 1886.
36. J. C. ARTHUR, 1887.

Secretaries of the Council, 1888–

37. C. LEO MEES, 1888.
38. H. C. BOLTON,* 1889.
39. H. W. WILEY, 1890.
40. A. W. BUTLER, 1891.
41. T. H. NORTON, 1892.
42. H. LEROY FAIRCHILD, 1893.
43. JAS. LEWIS HOWE, 1894.
44. CHARLES R. BARNES, 1895.
45. ASAPH HALL, JR., 1896.
46. D. S. KELLICOTT,* 1897.
47. FREDERICK BEDELL, 1898.
48. CHARLES BASKERVILLE, 1899.
49. WILLIAM HALLOCK, 1900.
50. D. T. MACDOUGAL, 1901.
51. H. B. WARD, 1902.
52. CH. WARDELL STILES, 1903.
53. CHAS. S. HOWE, 1904.
54. C. A. WALDO, 1905.
55. JOHN T. HAYFORD, 1906.
56. F. W. MCNAIR, 1906.
57 F. W. MCNAIR, 1907.
58. WILLIAM HARPER DAVIS, 1908.

Secretaries of Section A.—Mathematics, Physics and Chemistry, 1875–1881.

24. { S. P. LANGLEY,* 1875.
{ T. C. MENDENHALL, 1875.
25. A. W. WRIGHT, 1876.
26. H. C. BOLTON,* 1877.
27. F. E. NIPHER, 1878.
28. J. K. REES, 1879.
29. H. B. MASON, 1880.

SECRETARIES, CONTINUED.

30. E.T.TAPPAN, 1881, in the absence of JNO. TROWBRIDGE.

Secretaries of Section B.—Natural History, 1874–1881.

24. EDWARD S. MORSE, 1875.
25. ALBERT H. TUTTLE, 1876.
26. WILLIAM H. DALL, 1877.
27. GEORGE LITTLE, 1878.
28. WM. H. DALL, 1879, in the absence of A. C. WETHERBY.
29. CHARLES V. RILEY,* 1880.
30. WILLIAM SAUNDERS, 1881.

SECRETARIES OF SUBSECTIONS, 1875–1881.

Subsection of Chemistry.

24. F. W. CLARKE, 1875.
25. H. C. BOLTON,* 1876.
26. P. SCHWEITZER, 1877.
27. A. P. S. STUART, 1878.
28. W. R. NICHOLS,* 1879.
29. C. E. MUNROE, 1880.
30. ALFRED SPRINGER, 1881, in the absence of R.B.WARDER.

Subsection of Entomology.

30. B. P. MANN, 1881.

Subsection of Anthropology.

24. F. W. PUTNAM, 1875.
25. OTIS T. MASON, 1876.
26, 27. United with Section B.
28, 29, 30. J. G. HENDERSON, 1879–81.

Subsection of Microscopy.

25. E. W. MORLEY, 1876.
26. T. O. SOMMERS, JR., 1877.
27. G. J. ENGELMANN, 1878.
28, 29. A. B. HERVEY, 1879–80.
30. W. H. SEAMAN, 1881, in the absence of S. P. SHARPLES.

SECRETARIES OF THE SECTIONS, 1882–

Section A.—Mathematics and Astronomy.

31. H. T. EDDY, 1882.
32. G. W. HOUGH, 1883, in the absence of W. W. JOHNSON.
33. G. W. HOUGH, 1884.
34. E. W. HYDE, 1885.
35. S. C. CHANDLER, 1886.
36. H. M. PAUL, 1887.
37. C. C. DOOLITTLE, 1888.
38. G. C. COMSTOCK, 1889.
39. W. W. BEMAN, 1890.
40. F. H. BIGELOW, 1891.
41. WINSLOW UPTON, 1892.
42. C. A. WALDO, 1893, in the absence of A. W. PHILLIPS.
43. J. C. KERSHNER, 1894, in place of W.W.BEMAN, res'd.
44. ASAPH HALL, JR., 1895, in place of E. H. MOORE, res'd.
45. EDWIN B. FROST, 1896.
46. JAMES MCMAHON, 1897.
47. WINSLOW UPTON, 1898, in place of ALEX. ZIWET, resigned.
48. JOHN F. HAYFORD, 1899.
49. W. M. STRONG, 1900.

50. G. A. MILLER, 1901, in place of H. C. LORD, resigned.
51. E. S. CRAWLEY, 1902.
52. C. S. HOWE, 1903.
53–57. L. G. WELD, 1904–1907.
58. GEORGE A. MILLER, 1908.

Section B.—Physics.

31. C. S. HASTINGS, 1882.
32. F. E. NIPHER, 1883, in the absence of C. K. WEAD.
33. N. D. C. HODGES, 1884.
34. B. F. THOMAS, 1885, in place of A. A. MICHELSON, resigned.
35. H. S. CARHART, 1886.
36. C. LEO MEES, 1887.
37. ALEX. MACFARLANE, 1888.
38. E. L. NICHOLS, 1889.
39. E. M. AVERY, 1890.
40. ALEX. MACFARLANE, 1891.
41. BROWN AYRES, 1892.
42. W. LECONTE STEVENS, 1893.
43. B. W. SNOW, 1894.
44. E. MERRITT, 1895.
45. FRANK P. WHITMAN, 1896.
46. FREDERICK BEDELL, 1897.
47. W. S. FRANKLIN, 1898, in place of E. B. ROSA, resigned.
48. WILLIAM HALLOCK, 1899.
49. R. A. FESSENDEN, 1900.
50. JOHN ZELENY, 1901, in place of J. O. REED, resigned.
51. E. F. NICHOLS, 1902.
52. D. C. MILLER, 1903.
53–57. D. C. MILLER, 1904–1907.
58. A. D. COLE, 1908.

Section C.—Chemistry.

31. ALFRED SPRINGER, 1882.
32. { J. W. LANGLEY, 1883.
{ W. MCMURTRIE, 1883.
33. H. CARMICHAEL, 1884, in the absence of R. B. WARDER.
34. F. P. DUNNINGTON, 1885.
35. W. MCMURTRIE, 1886.
36. C. F. MABERY, 1887.
37. W. L. DUDLEY, 1888.
38. EDWARD HART, 1889.
39. W. A. NOYES, 1890.
40. T. H. NORTON, 1891.
41. JAS. LEWIS HOWE, 1892.
42. H. N. STOKES, 1893, in the absence of J. U. NEF.
43. MORRIS LOEB, 1894, in place of S. M. BABCOCK, resigned.
44. { W. P. MASON, 1895.
{ W. O. ATWATER, 1895.
45. FRANK P. VENABLE, 1896.
46. P. C. FREER, 1897.
47. C. BASKERVILLE, 1898.
48. H. A. WEBER, 1899.
49. A. A. NOYES, 1900.
50. W. MCPHERSON, 1901.
51. F. C. PHILLIPS, 1902.
52. H. N. STOKES, 1903.
53–58. CHAS. L. PARSONS, 1904–1908.

Section D.—Mechanical Science and Engineering.

31. J. BURKITT WEBB, 1882, in the absence of C. B. DUDLEY.
32. J. BURKITT WEBB, 1883, *pro tempore.*
33. J. BURKITT WEBB, 1884.
34. C. J. H. WOODBURY, 1885.
35. WILLIAM KENT, 1886.
36. G. M. BOND, 1887.
37. ARTHUR BEARDSLEY, 1888.
38. W. B. WARNER, 1889.
39. THOMAS GRAY, 1890.
40. WILLIAM KENT, 1891.
41. O. H. LANDRETH, 1892.
42. D. S. JACOBUS, 1893.

SECRETARIES OF THE SECTIONS, CONTINUED.

43. JOHN H. KINEALY, 1894.
44. H. S. JACOBY, 1895.
45. JOHN GALBRAITH, 1896.
46. JOHN J. FLATHER, 1897.
47. JOHN J. FLATHER, 1898, in the absence of W. S. ALDRICH.
48. J. M. PORTER, 1899.
49. W. T. MAGRUDER, 1900.
50. C. W. COMSTOCK, 1901, in the absence of W. H. JAQUES.
51. C. A. WALDO, 1902.
52. ELWOOD MEAD, 1903, in the absence of ALBERT KINGSBURY.
53–58. W. T. MAGRUDER, 1904–1908.

Section E.—Geology and Geography.

31. H. S. WILLIAMS, 1882, in the absence of C. E. DUTTON.
32. A. A. JULIEN, 1883.
33. E. A. SMITH, 1884.
34. G. K. GILBERT, 1885, in the absence of H. C. LEWIS.*
35. E. W. CLAYPOLE,* 1886.
36. W. M. DAVIS, 1887, in the absence of T. B. COMSTOCK.
37. JOHN C. BRANNER, 1888.
38. JOHN C. BRANNER, 1889.
39. SAMUEL CALVIN, 1890.
40. W J MCGEE, 1891.
41. R. D. SALISBURY, 1892.
42. W. H. HOBBS,* 1893, in place of R. T. HILL, resigned.
43. JED. HOTCHKISS,* 1894, in place of W. M. DAVIS, res'd.
44. J. PERRIN SMITH, 1895.
45. W. N. RICE, 1896, in place of A. C. GILL, resigned.
46. C. H. SMITH, JR., 1897.
47. WARREN UPHAM, 1898.
48. ARTHUR HOLLICK, 1899.
49. J. A. HOLMES, 1900.
50. H. B. PATTON, 1901, in the absence of R. A. F. PENROSE.
51. F. P. GULLIVER, 1902.
52. E. O. HOVEY, 1903.
53. E. O. HOVEY, 1904, in absence of G. B. SHATTUCK, 1904.
54–57. EDMUND O. HOVEY, 1905–1907.
58. F. P. GULLIVER, 1908.

Section F.—Biology, 1882–1892.

31. WILLIAM OSLER, 1882, in the absence of C. S. MINOT.
32. S. A. FORBES, 1883.
33. C. E. BESSEY, 1884.
34. J. A. LINTNER,* 1885, in place of C. H. FERNALD, res'd.
35. J. C. ARTHUR, 1886.
36. J. H. COMSTOCK, 1887.
37. B. E. FERNOW, 1888.
38. A. W. BUTLER, 1889.
39. J. M. COULTER, 1890.
40. A. J. COOK, 1891.
41. D. B. HALSTEAD, 1892.

Section F.—Zoology.

42. L. O. HOWARD, 1893.
43. JOHN B. SMITH, 1894, in place of WM. LIBBY, JR., resigned.
44. C. W. HARGITT, 1895, in place of S. A. FORBES, res'd.
45. D. S. KELLICOTT,* 1896.
46. C. C. NUTTING, 1897.
47. R. T. JACKSON, 1898, in place of C. W. STILES, resigned.
48. C. L. MARLATT, 1899, in place of F. W. TRUE, resigned.

SECRETARIES OF THE SECTIONS, CONTINUED.

49. C. H. EIGENMANN, 1900.
50. H. B. WARD, 1901.
51. C. W. STILES, 1902.
52. C. J. HERRICK, 1903.
53–58. C. J. HERRICK, 1904–08.

Section G.—Microscopy, 1882–85.

31. ROBERT BROWN, JR., 1882.
32. CARL SEILER, 1883.
33. ROMYN HITCHCOCK, 1884.
34. W. H. WALMSLEY, 1885.

Section G.—Botany.

42. B. T. GALLOWAY, 1893, in the absence of F. V. COVILLE.
43. CHAS. R. BARNES, 1894.
44. { B. T. GALLOWAY, 1895. M. B. WAITE, 1895.
45. GEORGE F. ATKINSON, 1896.
46. F. C. NEWCOMBE, 1897.
47. ERWIN F. SMITH, 1898.
48. W. A. KELLERMAN, 1899.
49. D. T. MACDOUGAL, 1900.
50. ERNST A. BESSEY, 1901, in the absence of A. S. HITCHCOCK.
51. H. VON SCHRENK, 1902.
52. C. J. CHAMBERLAIN, 1903.
53–55. F. E. LLOYD, 1904–1906.
56. G. F. ATKINSON, 1906, in the absence of F. E. LLOYD.
57. TRACY E. HAZEN, 1907, in the absence of T. E. LLOYD.
58. HENRY C. COWLES, 1908, in absence of F. E. LLOYD.

Section H.—Anthropology and Psychology.

31. OTIS T. MASON, 1882.
32. G. H. PERKINS, 1883.
33. G. H. PERKINS, 1884, in the absence of W. H. HOLMES.
34. ERMINNIE A. SMITH,* 1885.
35. A. W. BUTLER, 1886.
36. CHAS. C. ABBOTT, 1887, in the absence of F. W. LANGDON.
37. FRANK BAKER, 1888.
38. W. M. BEAUCHAMP, 1889.
39. JOSEPH JASTROW, 1890.
40. W. H. HOLMES, 1891.
41. W. M. BEAUCHAMP, 1892, in place of S. CULIN, resigned.
42. W. K. MOOREHEAD, 1893.
43. A. F. CHAMBERLIN, 1894.
44. { STEWART CULIN and W. W. TOOKER, 1895, in place of ANITA N. MCGEE, res'd.
45. G. H. PERKINS, 1896, in place of J. G. BOURKE,* dec'd.
46. ANITA N. MCGEE, 1897, in place of HARLAN I. SMITH, res'd.
47. MARSHALL H. SAVILLE, 1898.
48. E. W. SCRIPTURE, 1899, in place of GEO. A. DORSEY, resigned.
49. FRANK RUSSELL,* 1900.
50. G. G. MACCURDY, 1901.
51. HARLAN I. SMITH, 1902.
52. R. B. DIXON, 1903.
53–58. GEO. H. PEPPER, 04–08.

Section I.—Social and Economic Science.

31. { FRANKLIN B. HOUGH,* 1882. J. RICHARDS DODGE, 1882.
32. JOSEPH CUMMINGS,* 1883.
33. CHARLES W. SMILEY, 1884.
34. CHAS. W. SMILEY, 1885, in the absence of J. W. CHICKERING.
35. H. E. ALVORD,* 1886.
36. W. R. LAZENBY, 1887.

SECRETARIES OF THE SECTIONS, CONTINUED.

37. CHARLES S. HILL, 1888.
38. J. RICHARDS DODGE, 1889.
39. B. E. FERNOW, 1890.
40. B. E. FERNOW, 1891.
41. HENRY FARQUHAR, 1892, in place of L. F. WARD, made Vice-President.
42. NELLIE S. KEDZIE, 1893.
43. MANLEY MILES, 1894.
44. W. R. LAZENBY, 1895, in place of E. A. ROSS, resigned.
45. R. T. COLBURN, 1896.
46. ARCHIBALD BLUE, 1897.
47. MARCUS BENJAMIN, 1898.
48. CALVIN M. WOODWARD, 1899.
49. H. T. NEWCOMB, 1900.
50. R. A. PEARSON, 1901, in place of CORA A. BENNESON, res'd.
51. F. R. RUTTER, 1902, in place of WALTER F. WILLCOX, resigned.
52. F. H. HITCHCOCK, 1903.
53–57. J. F. CROWELL, 1904–07.
58. J. PEASE NORTON, 1908.

Section K.—Physiology and Experimental Medicine.

51. F. S. LEE, 1902.
52. F. S. LEE, 1903.
53. F. S. LEE, 1904.
54–58. W. J. GIES, 1905–08.

Section L.—Education.

58. E. L. THORNDIKE, 1908, pro tem.

TREASURERS.

1. JEFFRIES WYMAN,* 1848.
2. A. L. ELWYN,* 1849.
3. ST. J. RAVENEL,* 1850, in the absence of A. L. ELWYN.*
4. A. L. ELWYN,* 1850.
5. SPENCER F. BAIRD,* 1851, in the absence of A. L. ELWYN.*
6–7. A. L. ELWYN,* 1851–53.
8. J. L. LECONTE,* 1854, in the absence of A. L. ELWYN.*
9–19. A. L. ELWYN,* 1855–1870.
20–30. WM. S. VAUX,* 1871–1881.
32–42. WM. LILLY,* 1882–93.
43–49. R. S. WOODWARD, 1894–1900.
50–54. R. S. WOODWARD, 1901–1905.
55–60. R. S. WOODWARD, 1906–1910.

Commonwealth of Massachusetts.

In the Year One Thousand Eight Hundred and Seventy-four.

AN ACT

TO INCORPORATE THE "AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE."

Be it enacted by the Senate and House of Representatives, in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Joseph Henry of Washington, Benjamin Pierce of Cambridge, James D. Dana of New Haven, James Hall of Albany, Alexis Caswell of Providence, Stephen Alexander of Princeton, Isaac Lea of Philadelphia, F. A. P. Barnard of New York, John S. Newberry of Cleveland, B. A. Gould of Cambridge, T. Sterry Hunt of Boston, Asa Gray of Cambridge, J. Lawrence Smith of Louisville, Joseph Lovering of Cambridge, and John LeConte of Philadelphia, their associates, the officers and members of the Association, known as the "American Association for the Advancement of Science," and their successors, are hereby made a corporation by the name of the "American Association for the Advancement of Science," for the purpose of receiving, purchasing, holding, and conveying real and personal property, which it now is, or hereafter may be, possessed of, with all the powers and privileges, and subject to the restrictions, duties and liabilities set forth in the general laws which now or hereafter may be in force and applicable to such corporations.

SECTION 2. Said corporation may have and hold by purchase, grant, gift, or otherwise, real estate not exceeding one hundred thousand dollars in value, and personal estate of the value of two hundred and fifty thousand dollars.

SECTION 3. Any two of the corporators above named are hereby authorized to call the first meeting of the said corporation in the month of August next ensuing, by notice thereof "by mail," to each member of the said Association.

SECTION 4. This act shall take effect upon its passage.

HOUSE OF REPRESENTATIVES, March 10, 1874.
Passed to be enacted,
JOHN E. SANFORD, *Speaker.*

IN SENATE, March 17, 1874.
Passed to be enacted,
GEO. B. LORING, *President.*

March 19, 1874.
Approved.
W. B. WASHBURN.

SECRETARY'S DEPARTMENT,
Boston, April 3, 1874.
A true copy, Attest:
DAVID PULSIFER,
Deputy Secretary of the Commonwealth.

CONSTITUTION

OF THE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Incorporated by Act of the General Court of the Commonwealth of Massachusetts.

OBJECTS.

ARTICLE 1. The objects of the Association are, by periodical and migratory meetings, to promote intercourse between those who are cultivating science in different parts of America, to give a stronger and more general impulse and more systematic direction to scientific research, and to procure for the labors of scientific men increased facilities and a wider usefulness.

MEMBERSHIP.

ART. 2. The Association shall consist of members, fellows, patrons, corresponding members and honorary fellows.

MEMBERS.

ART. 3. Any person may become a member of the Association upon recommendation in writing by two members or fellows, and election by the Council. Any incorporated scientific society or institution, or any public or incorporated library, may be enrolled as a member of the Association by vote of the Council by payment of the initiation fee; such society, institution, or library may be represented by either the President, Curator, Director, or Librarian presenting proper credentials at any meeting of the Association for which the assessment has been paid.

ASSOCIATES.

Associates for any single meeting shall be admitted on the payment of three dollars, such associates to have all the privileges of the meeting, except reading papers and voting.

Members of scientific societies whose meetings are contemporaneous with, or immediately subsequent to, that of the Associa-

tion, and which are recognized by vote of the Council as "Affiliated Societies," may become associate members for that meeting on the payment of three dollars. They shall be entitled to all the privileges of membership except voting or appointment to office, but their names shall not appear in the list of members printed in the annual report.

Foreign Associates.

Any member or fellow of any national scientific or educational institution, or of any society or academy of science, of any country not in America, who may be present at any meeting of the Association shall, on presenting the proper credentials, be enrolled without fee as a Foreign Associate, and shall be entitled to all the privileges of the meeting except voting on matters of business.

Fellows.

Art. 4. Fellows shall be elected by the Council from such of the members as are professionally engaged in science, or have, by their labors, aided in advancing science. The election of fellows shall be by ballot, and a majority vote of the members of the Council at a designated meeting of the Council.

Patrons.

Art. 5. Any person paying to the Association the sum of one thousand dollars shall be classed as a patron, and shall be entitled to all the privileges of a member and to all its publications.

Honorary Fellows and Corresponding Members.

Art. 6. Honorary fellows of the Association, not exceeding three for each Section, may be elected, the nominations to be made by the Council and approved by ballot in the respective sections before election by ballot in General Session. Honorary fellows shall be entitled to all the privileges of fellows, and shall be exempt from all fees and assessments, and entitled to all publications of the Association issued after the date of their election. Corresponding members shall consist of such scientists not residing in America as may be elected by the Council, and their number shall be limited to fifty. Corresponding members shall be entitled to

all the privileges of members and to the annual volumes of Proceedings published subsequent to their election.

SUSPENSIONS.

ART. 7. The name of any member or fellow two years in arrears for annual dues shall be erased from the list of the Association, provided, that two notices of indebtedness, at an interval of at least three months, shall have been given; and no such person shall be restored until he has paid his arrearages or has been re-elected. The Council shall have power to exclude from the Association any member or fellow, on satisfactory evidence that said member or fellow is an improper person to be connected with the Association, or has in the estimation of the Council made improper use of his membership or fellowship.

OFFICERS.

ART. 8. No member or fellow shall take part in the organization of, or hold office in, more than one section at any one meeting.

ART. 9. The officers of the Association shall be elected by ballot by the General Committee from the fellows, and shall consist of a President, a Vice-President from each section, a Permanent Secretary, a General Secretary, a Secretary of the Council, a Treasurer, and a Secretary of each Section; these, with the exception of the Permanent Secretary, the Treasurer, and the Secretaries of the Sections, shall be elected at each meeting for the following one, and, with the exception of the Treasurer and the Permanent Secretary, shall not be re-eligible for the next two meetings. The term of office of the Permanent Secretary, of the Treasurer, and of the Secretaries of the Sections, shall be five years.

PRESIDENT.

ART. 10. The President, or, in his absence, the senior Vice-President present, shall preside at all General Sessions of the Association and at all meetings of the Council. It shall also be the duty of the President to give an address at a General Session of the Association at the meeting following that over which he presided.

Vice-Presidents.

Art. 11. The Vice-Presidents shall be chairmen of their respective Sections, and of their Sectional Committees, and it shall be part of their duty to give an address, each before his own Section, at such time as the Council shall determine at the meeting subsequent to that at which he presides. The Vice-Presidents may appoint temporary chairmen to preside over the sessions of their sections, but shall not delegate their other duties. The Vice-Presidents shall have seniority in order of their continuous membership in the Association.

General Secretary.

Art. 12. The General Secretary shall be the Secretary of all General Sessions of the Association, and shall keep a record of the business of these sessions. He shall receive the records from the Secretaries of the Sections, which, after examination, he shall transmit with his own records to the Permanent Secretary within two weeks after the adjournment of the meeting.

Secretary of the Council.

Art. 13. The Secretary of the Council shall keep the records of the Council. He shall give to the Secretary of each Section the titles of papers assigned to it by the Council. He shall receive proposals for membership and bring them before the Council.

Permanent Secretary.

Art. 14. The Permanent Secretary shall be the executive officer of the Association under the direction of the Council. He shall attend to all business not specially referred to committees nor otherwise constitutionally provided for. He shall keep an account of all business that he has transacted for the Association, and make annually a general report for publication in the annual volume of Proceedings. He shall attend to the printing and distribution of the annual volume of Proceedings, and all other printing ordered by the Association. He shall issue a circular of information to members and fellows at least three months before each meeting, and shall, in connection with the Local Committee, make all necessary arrangements for the meetings of the

Association. He shall provide the Secretaries of the Association with such books and stationery as may be required for their records and business, and shall provide members and fellows with such blank forms as may be required for facilitating the business of the Association. He shall collect all assessments and admission fees, and notify members and fellows of their election, and of any arrearages. He shall receive, and bring before the Council, the titles and abstracts of papers proposed to be read before the Association. He shall keep an account of all receipts and expenditures of the Association, and report the same annually at the first meeting of the Council, and shall pay over to the Treasurer such unexpended funds as the Council may direct. He shall receive and hold in trust for the Association all books, pamphlets, and manuscripts belonging to the Association, and allow the use of the same under the provisions of the Constitution and the orders of the Council. He shall receive all communications addressed to the Association during the intervals between meetings, and properly attend to the same. He shall at each meeting report the names of fellows and members who have died since the preceding meeting. He shall be allowed a salary which shall be determined by the Council, and may employ one or more clerks at such compensation as may be agreed upon by the Council.

Treasurer.

Art. 15. The Treasurer shall invest the funds received by him in such securities as may be directed by the Council. He shall annually present to the Council an account of the funds in his charge. No expenditure of the principal in the hands of the Treasurer shall be made without a unanimous vote of the Council, and no expenditure of the income received by the Treasurer shall be made without a two-thirds vote of the Council. The Treasurer shall give bonds for the faithful performance of his duty in such manner and sum as the Council shall from time to time direct.

Secretaries of the Sections.

Art. 16. The Secretaries of the Sections shall keep the records of their respective Sections, and, at the close of the meeting, give

the same, including the records of subsections, to the General Secretary. They shall also be the Secretaries of the sectional committees. The Secretaries shall have seniority in order of their continuous membership in the Association.

VACANCIES.

ART. 17. In case of a vacancy in the office of President, the senior Vice-President shall preside, as provided in Article 10, until the General Committee can be assembled and the vacancy filled by election. Vacancies in the offices of Vice-President, Permanent Secretary, Secretary of the Council, Secretaries of the Sections, and Treasurer, shall be filled by the Council by ballot.

COUNCIL.

ART. 18. The Council shall consist of the Past Presidents, and the Vice-Presidents of the last two meetings, together with the President, the Vice-Presidents, the Permanent Secretary, the General Secretary, the Secretary of the Council, the Secretaries of the Sections, and the Treasurer of the current meeting, of one fellow elected from each Section by ballot on the first day of its meeting, of one fellow elected by each affiliated society, and one additional fellow from each affiliated society having more than twenty-five members who are fellows of the Association, and of nine fellows elected by the Council, three being annually elected for a term of three years. The members present at any regularly called meeting of the Council, provided there are at least five, shall form a quorum for the transaction of business. The Council shall meet on the day preceding each annual meeting of the Association, and arrange the program for the first day of the sessions. The time and place of this first meeting shall be designated by the Permanent Secretary. Unless otherwise agreed upon, regular meetings of the Council shall be held in the Council room at 9 o'clock A. M., on each day of the meeting of the Association. Special meetings of the Council may be called at any time by the President. The Council shall be the board of supervision of the Association, and no business shall be transacted by the Association that has not first been referred to, or originated with, the Council. The Council shall decide

which papers, discussions, and other proceedings shall be published, and have the general direction of the publications of the Association; manage the financial affairs of the Association; arrange the business and programs for General Sessions; suggest subjects for discussion, investigation or reports; elect members and fellows; and receive and act upon all invitations extended to the Association and report the same at a General Session of the Association. The Council shall receive all reports of Special Committees and decide upon them, and only such shall be read in General Session as the Council shall direct. The Council shall appoint at each meeting the following subcommittees who shall act, subject to appeal to the whole Council, until their successors are appointed at the following meeting: 1, on Papers and Reports; 2, on Members; 3, on Fellows.

General Committee.

Art. 19. The General Committee shall consist of the Council and one member or fellow elected by each of the Sections, who shall serve until their successors are elected. It shall be the duty of the committee to meet at the call of the President and elect the general officers for the following meeting of the Association. It shall also be the duty of this committee to fix the time and place for the next meeting. The Vice-President and Secretary of each Section shall be recommended to the General Committee by the Sectional Committee.

Meetings.

Art. 20. The Association shall hold a public meeting annually for one week or longer, at such time and place as may be determined by vote of the General Committee, and the preliminary arrangements for each meeting shall be made by the Local Committee, in conjunction with the Permanent Secretary and such other persons as the Council may designate.

But if suitable preliminary arrangements cannot be made, the Council may afterward change the time and place appointed by the General Committee, if such change is believed advisable by two-thirds of the members present.

ART. 21. A General Session shall be held at 10 o'clock, A. M., on the first day of the meeting, and at such other times as the Council may direct.

SECTIONS AND SUBSECTIONS.

ART. 22. The Association shall be divided into Sections, namely:—A, *Mathematics and Astronomy;* B, *Physics;* C, *Chemistry; including its application to Agriculture and the Arts;* D, *Mechanical Science and Engineering;* E, *Geology and Geography;* F, *Zoology;* G, *Botany;* H, *Anthropology and Psychology;* I, *Social and Economic Science;* K, *Physiology and Experimental Medicine;* L, *Education.* The Council shall have power to consolidate any two or more Sections temporarily, and such consolidated Sections shall be presided over by the senior Vice-President and Secretary of the Sections comprising it.

SECTIONAL COMMITTEES.

ART. 23. Immediately on the organization of a Section there shall be a member or fellow elected by ballot after open nomination, who, with the Vice-President and Secretary and the Vice-President and Secretary of the preceding meeting, and the members or fellows elected by ballot at the four preceding meetings, shall form its Sectional Committee. The Sectional Committee shall have power to fill vacancies in their own numbers. Meetings of the Sections shall not be held at the same time with a General Session. The Sectional Committee may invite distinguished foreign associates present at any meeting to serve as honorary members of said Committee.

ART. 24. The Sectional Committee of any Section may at its pleasure form one or more temporary Subsections, and may designate the officers thereof. The Secretary of a Subsection shall, at the close of the meeting, transmit his records to the Secretary of the section.

ART. 25. No paper shall be read in any Section or Subsections until it has been placed on the program of the day by the Sectional Committee.

ART. 26. The Sectional Committees shall arrange and direct the business of their respective Sections. They shall prepare the

daily programs and give them to the Permanent Secretary for printing at the earliest moment practicable. No titles of papers shall be entered on the daily programs except such as have passed the Committee. No change shall be made in the program for the day in a Section without the consent of the Sectional Committee. The Sectional Committees may refuse to place the title of any paper on the program; but every such title, with the abstract of the paper or the paper itself, must be referred to the Council with the reasons why it was refused. The Sectional Committee shall also make nominations to the General Committee for Vice-President and Secretary of their respective Sections as provided for in Article 19.

ART. 27. The Sectional Committees shall examine all papers and abstracts referred to the Sections, and they shall not place on the program any paper inconsistent with the character of the Association; and to this end they have power to call for any paper, the character of which may not be sufficiently understood from the abstract submitted.

PAPERS AND COMMUNICATIONS.

ART. 28. All members and fellows must forward to the Secretary of the proper Section or to the Permanent Secretary, as early as possible, and when practicable before the convening of the Association, full titles of all the papers which they propose to present during the meeting, with a statement of the time that each will occupy in delivery, and also such abstracts of their contents as will give a general idea of their nature; and no title shall be considered by a Sectional Committee until an abstract of the paper or the paper itself has been received.

ART. 29. If the author of any paper be not ready when called upon, in the regular order of the official program, the title may be dropped to the bottom of the list.

ART. 30. Whenever practicable the proceedings and discussions at General Sessions, Sections and Subsections, shall be reported by professional reporters, but such reports shall not appear in print as the official reports of the Association unless revised by the Secretaries.

PRINTED PROCEEDINGS.

ART. 31. The Permanent Secretary shall have the Proceedings of each meeting printed in an octavo volume as soon after the

meeting as possible, beginning one month after adjournment. Authors must prepare their papers or abstracts ready for the press, and these must be in the hands of the Secretaries of the Sections before the final adjournment of the meeting, otherwise only the titles will appear in the printed volume. The Council shall have power to order the printing of any paper by abstract or title only. Whenever practicable, proofs shall be forwarded to authors for revision. If any additions or substantial alterations are made by the author of a paper after its submission to the Secretary, the same shall be distinctly indicated. Illustrations must be provided for by the authors of the papers, or by a special appropriation from the Council. Immediately on publication of the volume, a copy shall be forwarded to every member and fellow of the Association who shall have paid the assessment for the meeting to which it relates, and it shall also be offered for sale by the Permanent Secretary at such price as may be determined by the Council. The Council shall also designate the institutions to which copies shall be distributed.

Local Committee.

Art. 32. The Local Committee shall consist of persons interested in the objects of the Association and residing at or near the place of the proposed meeting. It is expected that the Local Committee, assisted by the officers of the Association, will make all essential arrangements for the meeting, and issue a circular giving necessary particulars, at least one month before the meeting.

Library of the Association.

Art. 33. All books and pamphlets received by the Association shall be in charge of the Permanent Secretary, who shall have a list of the same printed and shall furnish a copy to any member or fellow on application. Members and fellows who have paid their assessments in full shall be allowed to call for books and pamphlets, which shall be delivered to them at their expense on their giving a receipt agreeing to make good any loss or damage, and to return the same free of expense to the Permanent Secretary at the time specified in the receipt given. All books and pamphlets in circulation must be returned at each meeting. Not more than five books, including volumes, parts of volumes, and pamphlets

shall be held at one time by any member or fellow. Any book may be withheld from circulation by order of the Council. [The Library of the Association was, by vote of the Council in 1895, placed on deposit in the Library of the University of Cincinnati Ohio. Members can obtain the use of books by writing to the Librarian of the University Library, Cincinnati, Ohio.]

Admission Fee and Assessments.

Art. 34. The admission fee for members shall be five dollars in addition to the annual dues.

Art. 35. The annual dues for members and fellows shall be three dollars.

Art. 36. Any member or fellow who shall pay the sum of fifty dollars to the Association, at any one time, shall become a Life Member, and as such shall be exempt from all further assessments, and shall be entitled to the Proceedings of the Association. All money thus received shall be invested as a permanent fund, the income of which, during the life of the member, shall form a part of the general fund of the Association, but, after his death, shall be used only to assist in original research, unless otherwise directed by unanimous vote of the Council. (New members becoming life members must pay the admission fee of five dollars.)

Art. 37. All fees and dues must be paid to the Permanent Secretary who shall give proper receipts for the same.

Accounts.

Art. 38. The accounts of the Permanent Secretary and of the Treasurer shall be audited annually by Auditors appointed by the Council.

Alterations of the Constitution.

Art. 39. No part of this Constitution shall be amended or annulled, without the concurrence of three-fourths of the members and fellows present in General Session, after notice given at a General Session of a preceding meeting of the Association.

MEMBERS AND FELLOWS

OF THE

AMERICAN ASSOCIATION

FOR THE

ADVANCEMENT OF SCIENCE.

SURVIVING FOUNDERS.

[At the Brooklyn Meeting, 1894, a resolution was unanimously adopted by which all the surviving founders of the Association who have maintained an interest in science were made Honorary Life Members of the Association in recognition of their pioneer work in American Science.]

BOYÉ, MARTIN H., Coopersburg, Pa.
GIBBS, WOLCOTT, Newport, R. I.

PATRONS.

[Persons contributing one thousand dollars or more to the Association are classed as Patrons, and are entitled to the privileges of members and to the publications. The names of Patrons are to remain permanently on the list.]

THOMPSON, MRS ELIZABETH, Stamford, Conn. (22). (Died July, 1899.)
LILLY, GEN. WILLIAM, Mauch Chunk, Pa. (28). (Died Dec. 1, 1893.)
HERRMAN, MRS. ESTHER, 59 West 56th St., New York, N. Y. (29).
MCMILLIN, EMERSON, 40 Wall St., New York, N. Y. (37).

HONORARY FELLOWS.

[See ARTICLE VI of the Constitution.]

*GIBBS, PROF. WOLCOTT, Newport, R. I. (1). 1896. **B C**
*WESTINGHOUSE, GEORGE, Pittsburg, Pa. (50). 1902. **D**

MEMBERS AND FELLOWS.

The names designated by an asterisk (*) are those of Fellows. (See ARTICLE IV of the Constitution.) The number in parenthesis indicates the meeting at which the Member joined the Association; the date following is the year when made a Fellow; the black letters at end of line are those of the Sections to which the Member or Fellow belongs. When the name is given in small capitals, it designates that the Member or Fellow is also a Life Member. Any Member or Fellow may become a Life Member by the payment of fifty dollars. (New members becoming life members must pay the admission fee of five dollars.) The income of the money derived from a life membership is used for the general purposes of the Association during the life of the Member; afterwards it is to be used to aid in original research. Life Members are exempt from the annual assessment, and are entitled to the publications. The names of Life Members are printed in small capitals in the regular list of Members and Fellows.

The Constitution requires that the names of all Members two years in arrears shall be omitted from the list, but their names will be restored on payment of arrearages. Members not in arrears are entitled to the publications of the Association, including the journal *Science*.

*Abbe, Cleveland, Professor of Meteorology, Weather Bureau, U. S. Dept. Agriculture, Washington, D. C. (16). 1874. **A B**

*Abbe, Cleveland, Jr., U. S. Weather Bureau, San Francisco, Cal. (44). 1899. **E**

*Abbe, Dr. Robert, 13 W. 50th St., New York, N. Y. (36). 1892.

*Abbot, Charles G., Smithsonian Institution, Washington, D. C. (49). 1902. **B**

Abbot, E. Stanley, M. D., First Assistant Physician, McLean Hospital, Waverley, Mass. (54). **K**

*Abbott, Alexander C., Univ. of Penna., Philadelphia, Pa. (52). 1905. **K**

Abbott, Frank L., Professor of Physical Sciences, State Normal School, Greeley, Colo. (50). **B E**

Abbott, James Francis, Ph. D., Asst. Prof. of Zoology, Dept. Biology, Washington University, St. Louis, Mo. (58). **F**

Abbott, Theodore Sperry, C. E., Saltillo, Coahuila, Mexico. (52). **D**

*Abel, John J., Professor of Pharmacology, Johns Hopkins University, Baltimore, Md. (51). 1902. **C K**

Abraham, Abraham, care of Abraham & Straus, Brooklyn, N. Y. (43). **I**

Abrams, LeRoy, Asst. Prof. Botany, Stanford University, Cal. (54). **G**

Abt, Dr. Joseph L., 733 So. Halsted St., Chicago, Ill. (58). **K**

*Acheson, Edward Goodrich, President of the International Acheson Graphite Co., Niagara Falls, N. Y. (50). 1903. **C**

*Adams, Charles C., Zoology Bldg., Univ. of Chicago, Chicago, Ill. (50). 1903. **F**

Adams, C. F., Entomologist, Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. (54). **F**

*Adams, Charles Francis, Head of Science Department, Central High School, Detroit, Mich. (53). 1906. **B**

Adams, Comfort A., Prof. Electrical Engineering, Harvard Univ., Cambridge, Mass. (47). **B**

*Adams, Cyrus C., 1043 Southern Boulevard, New York, N. Y. (54). 1906. E

Adams, Edward Dean, Empire Bldg., 71 Broadway, New York, N. Y. (49).

Adams, Frederick C., Mechanic Arts High School, Boston, Mass. (50). B C L

Adams, George E., 184 LaSalle St., Chicago, Ill. (58).

Adams, John W., Prof. of Physics, McKinley Manual Training School, Washington, D. C. (54). B G

Adams, Mary W., 477 Prospect St., New Haven, Conn. (57). E

Adams, Matthew Prior, Instructor in Physics and Chemistry, State Normal School, Box 555, New Britain, Conn. (54). B C

Adams, Maxwell, Prof. Chemistry, Nevada State University, Reno, Nevada. (57). C

Aderhold, T. M., Zeigler, Ill. (58).

*Adler, Cyrus, Smithsonian Institution, Washington, D. C. (54). 1906. H

*Adler, Felix, M. D., 123 E. 60th St., New York, N. Y. (54). 1906. K

*Adler, Isaac, M. D., 22 E. 62d St., New York, N. Y. (49). 1903. K

Adler, Leon N., Ph. D., Manufacturing Chemist, 100 William St., New York, N. Y. (56). C

*Adriance, John S., 105 E. 39th St., New York, N. Y. (39). 1895. C

Agnew, Paul G., Bureau of Standards, Washington, D. C. (54). B

*Aguilera, José G., Director of the Geological Institute of Mexico, 6a Cipres, No. 2728, Mexico City, D. F. Mexico. (53). 1905. E

Ahern, M. J., S. J., Universitatstrasse 8, Innsbruck, Tyrol, Austria. (57). E

Aikin, Joseph M., M. D., Professor of Mental Diseases, Univ. of Nebraska College of Medicine, Omaha, Neb. (55). K

Aikins, Prof. H. Austin, Western Reserve University, Cleveland, Ohio. (58). B.

Ailes, Hon. Milton E., Riggs National Bank, Washington, D. C. (52). I

Ainsworth, Herman Reeve, M. D., Addison, N. Y. (51). I K

*Aitken, Robert G., Lick Observatory, Mt. Hamilton, Cal. (53). 1906. A

Akeley, Lewis E., Professor of Physics and Chemistry, University of South Dakota, Vermillion, S. Dak. (51). B C

Albert, Harry Lee, Professor of Biology, State Normal School, Cape Girardeau, Mo. (53). F G

Albert, Henry, M. D., Professor of Pathology and Bacteriology, Iowa State Univ. College of Medicine, Iowa City, Iowa. (57). K

Albrecht, Emil Poole, Secretary of The Bourse, 1523 N. 17th St., Philadelphia, Pa. (51). **A D**

*Albrecht, Sebastian, Lick Observatory, Mt. Hamilton, Cal. (52). 1906. **A**

Albree, Chester B., Mechanical Engineer and Manufacturer, 1115 Market St., Allegheny, Pa. (50). **D**

*Alden, John, Chemist, Pacific Mills, Lawrence, Mass. (36). 1898. **C**

*Alderson, Victor C., President Colorado School of Mines, Golden, Colorado. (50). 1903. **D**

*Aldrich, Truman Heminway, 1739 P St. N.W., Washington, D. C. (54). 1906. **E**

*Aldrich, Wm. S., Director, Thomas S. Clarkson Memorial School of Technology, Potsdam, N. Y. (43). 1897. **D**

Alexander, Daniel Basil William, 1020 Date St., Los Angelos, Cal. (57). **C**

Alexander, Harry E. E., M. E., 18 and 20 W. 34th St., New York, N. Y. (50). **D**

*Aley, Robert J., Ph. D., Indiana Univ., Bloomington, Ind. (49). 1906. **A**

Allabach, Miss Lula F., Teacher of Botany, 5th Avenue High School, Pittsburg, Pa. (52). **F**

Allderdice, Wm. H., Commander U. S. Navy, Navy Dept., Washington, D. C. (33). **D**

Alleman, Gellert, Ph. D., Swarthmore College, Swarthmore, Pa. (50). **C**

*Allen, Bennet Mills, Instructor in Anatomy, University of Wisconsin, Madison, Wis. (54). 1906. **F K**

*Allen, Charles Elmer, 810 W. Johnson St., Madison, Wis. (55). 1908. **G**

Allen, Charles Metcalf, Assistant Prof. of Experimental Engineering, Worcester Polytechnic Institute, Worcester, Mass. (52). **D**

Allen, David R., Associate Professor of Mathematics, University of Utah, Salt Lake City, Utah. (57). **A**

Allen, Edwin West, Editor of *Experiment Station Record*, U. S. Dept. Agriculture, Washington, D. C. (52). **I**

*Allen, Frank, Ph. D., Professor of Physics, Univ. of Manitoba, Winnipeg, Manitoba, Canada. (49). 1903. **B**

Allen, James Lane, 66 Fifth Ave, New York, N. Y. (57). **I**

Allen, Richard H., Chatham, N. J. (49).

Allen, William Frederick, M. S., 180 Scotland Road, South Orange, N. J. (55).

Aller, Henry D., Supt. and Director U. S. Fisheries Laboratory, Beaufort, N. C. (57). **F**

*Allis, Edward Phelps, Jr., Palais de Carnolès, Mentone, South France. (52). 1905. **F**

*Allison, Andrew, Ellisville, Miss. (54). 1906. F G
*Allison, C. Edward, M. D., Elysburg, Pa. (51). 1906. K
Allison, Samuel B., 6035 Drexel Ave., Chicago, Ill. (58).
Allison, William B., 619 Gravier St., New Orleans, La. (55). G
Almy, Frank Fayette, Professor Physics, Iowa College, Grinnell, Iowa. (57). B
*Almy, John E., Ph. D., Instructor in Physics, University of Nebraska, Lincoln, Neb. (50). 1901. B
Alpers, Martin E., Jr., 94 Randolph Ave., Dover, N. J. (57). K
*Alsberg, Carl Lucas, Dept. Biological Chemistry, Harvard Medical School, Boston, Mass. (55). 1908. C
Alsop, E. B., 1502 20th St., N. W., Washington, D. C. (50). D
Alspach, E. F., 455 West Sixth Ave., Columbus, O. (48). H
Altamirano, Dr. Fernando, Instituto Medico Nacional, Esquina de Balderas y Ayuntamiento num 1202, Mexico, D. F. (53). G
Alvord, John W., Hydraulic and Sanitary Engineer, 1212 Hartford Bldg., Chicago, Ill. (58).
Alwine, John, Jr., Associate Manager Baltimore Chrome Works, 1348 Block St., Baltimore, Md. (54). C
*Alwood, Wm. B., Charlottesville, Va. (39). 1891. F
Amberg, Emil, M. D., 270 Woodward Ave., Detroit, Mich. (58). K
Ames, Edward Scribner, University of Chicago, Chicago, Ill. (58).
*Ames, Oakes, Assistant Director of the Botanic Garden of Harvard University, North Easton, Mass. (50). 1905 G
*Ami, H. M., Geological Survey of Canada, Ottawa, Ontario, Canada. (54). 1906. E
Anders, Howard S., M. D., 1836 Wallace St., Philadelphia, Pa. (51). K
Anderson, A. J. C., 127 Water St., New York, N. Y. (49).
*Anderson, Alexander P., 5463 Washington Ave., Chicago, Ill. (45). 1899. G
Anderson, Douglas S., Professor Electrical Engineering, Tulane Univ., New Orleans, La. (49). B D
*Anderson, Frank, Mining Engineer, 1 Henry Flats, Salt Lake City, Utah. (50). 1906. D E
Anderson, Frank P., Epworth Seminary, Epworth, Iowa. (46).
*Anderson, Dr. John F., Hygienic Lab., Public Health and Marine Hospital Service, Washington, D. C. (58). 1908. K
Anderson, Robt. Van Vleck, U. S. Geological Survey, Washington, D. C. (57). E
*Anderson, William G., M. D., Director Yale University Gymnasium, New Haven, Conn. (52). 1906. H K
Anderson, Winslow, M. D., President of College of Physicians and Surgeons of San Francisco, 1025 Sutter St., San Francisco, Cal. (51). K

Andrews, Champe S., 37 Liberty St., New York, N. Y. (57).
*Andrews, Clement Walker, Librarian of The John Crerar Library, Chicago, Ill. (53). 1908. C
*Andrews, Frank Marion, Ph. D., Asst. Professor Botany, Indiana University, Bloomington, Ind. (52). 1903. G
Andrews, Launcelot W., 3731 Westminster Place, St. Louis, Mo. (58). C
Andrews, Wm. Edward, Principal Township High School, Taylorville, Ill. (52). D
Andrews, William Symes, care Gen'l Elec. Co., Schenectady, N. Y. (50). D E
Angela, Sister Helen, 4928 Evans Ave., Chicago, Ill. (58).
Angell, William R., Esq., 1011 Ashland Block, Chicago, Ill. (58).
Angier, Roswell Parker, Yale University, New Haven, Conn. (57). K
Angle, Dr. Edward H., 1023 North Grand Ave., St. Louis, Mo. (53). F
Anthony, Gardner Chace, Prof. of Technical Drawing and Dean of the Engineering Dept. of Tufts College, Tufts College, Mass. (56). D
*Anthony, Prof. Wm. A., Cooper Union, New York, N. Y. (28). 1880. B
Apple, Joseph H., A. M., President of the Woman's College, Frederick, Md. (52). I
*Appleton, John Howard, Sc. D., Professor of Chemistry, Brown University, Providence, R. I. (50) 1901. C
*Archibald, Raymond Clare, Acadia Univ., Wolfville, N. S. (54). 1906. A
*Argall, Philip, 730 Majestic Building, Denver, Col. (54). 1906. C E
Armfield, Frank, Monroe, N. C. (55). I
Armitage, Thomas L., M. D., Princeton, Minnesota. (51). K
*Armsby, Henry Prentiss, Director Agrl. Expr. Station, State College, Pa. (52). 1903. C
ARMSTRONG, S. T., M. D., 144 East 37th St., New York, N. Y. (57). K
*Arnold, Bion Joseph, 181 La Salle St., Chicago, Ill. (50). 1903. D
Arnold, Ernst Hermann, M. D., Director New Haven Normal School of Gymnastics, 46 York Square, New Haven, Conn. (52). K
Arnold, Harold De Forrest, 5821 Jackson Ave., Chicago, Ill. (57). B
Arnold, James Loring, Asst. Prof. Physics, New York University, Gould Hall, University Heights, New York City. (57). B D
*Arnold, Ralph, U. S. Geological Survey, Washington, D. C. (51). 1906. E

*Arthur, J. C., D. Sc., Botanist Agric. Exper. Sta., Purdue Univ., Lafayette, Ind. (21). 1883. G

Ascham, Louis, 420 W. Willow St., Chippewa Falls, Wis. (54). F G

Asdale, William James, M. D., Professor of Gynecology, Western Penna. Medical College, Pittsburg, Pa. (51). K

Ashbrook, Donald Sinclair, 907 Del. Ave., Wilmington, Del. (51). C

*Ashley, George Hall, U. S. Geol. Survey, Washington, D. C. (51). 1903. E F

Ashley, Jessie, 5 Nassau St., New York, N. Y. (57).

Aspinwall, John, Newburgh, N. Y. (49).

Astor, Col. John Jacob, 23 West 26th St., New York, N. Y. (57). I

Atkins, Martin D., 269 Forest Ave., River Forest, Ill. (48). B

Atkinson, Dr. D. A., 602 Oakwood Ave., West View, Pa. (56).

*Atkinson, George F., Cornell University, Ithaca, N. Y. (39). 1892. G

Atkinson, John B., Earlington, Ky. (26). D

*Atwell, Charles B., Northwestern Univ., Evanston, Ill. (36). 1890. G

Auchincloss, Hugh, M. D., 24 East 48th St., New York, N. Y. (57). K

*Auchincloss, Wm. S., Atlantic Highlands, N. J. (29). 1886. A D

Austin, C. F., Horticulturist, Estacion Central Agronomica, Santiago de las Vegas, Cuba. (54). G

Austin, F. E., Electrical Engineer, 11 South Park St., Hanover, N. H. (57). D

*Austin, Oscar P., Chief of Bureau of Statistics, Dept. of Commerce and Labor, Washington, D. C. (51). 1907. I

*Avery, Elroy M., Ph. D., LL. D., 2831 Woodhill Road, S. E., Cleveland, Ohio. (35). 1899. B

*Avery, Samuel, Director Chemical Laboratories, University of Nebraska, Station A, Lincoln, Neb. (57). 1908. C

Ayer, Edward Everett, 1515 Railway Exchange Bldg., Chicago, Ill. (37). H

Aymar, J., 70 West 54th St., New York, N. Y. (57).

Ayres, George Frederic, Ph. D., St. Charles, Mo. (58).

Ayres, Horace B., Aitkin, Minn. (40).

Babasinian, Vahan S., Instructor in Organic Chem., Lehigh Univ., So. Bethlehem, Pa. (57). C

Babcock, Earie Brownell, 5546 Madison Ave., Chicago, Ill. (58).

Babcock, Ernest Browne, Dept. of Agriculture, Univ. of Cal., Berkeley, Cal. (57). G

*Babcock, Prof. S. Moulton, 432 Lake St., Madison, Wis. (33). 1885. C

Babcock, W. Wayne, M. D., 3302 No. Broad St., Philadelphia, Pa. (54). **K**

*Baber, Zonia, Associate Prof. Geography, School of Education, University of Chicago, Chicago, Ill. (54). 1906. **E**

Bacon, Arthur Avery, Professor of Physics, Hobart College, Geneva, N. Y. (53). **B**

Bacon, Charles Sumner, M. D., 756 Sedgwick Street, Chicago, Ill. (58). **K**

Bacon, George Preston, Prof. of Physics, Wooster Univ., Wooster, Ohio. (58). **B**

Baehr, George, 78 West 94th St., New York, N. Y. (57). **K**

*Baekeland, L. H., Sc. D., Harmony Park, Yonkers-on-Hudson, N. Y. (57). 1908. **C**

Baerecke, John F., M. D., Professor of Biology, Stetson University, DeLand, Fla. (50). **F K**

*Bagg, Rufus Mather, Jr., Ph. D., Univ. of Illnois, Urbana, Ill. (49). 1903. **E**

BAGGALEY, RALPH, Pittsburg, Pa. (50). **D**

*Bailey, E. H. S., Professor of Chemistry, Univ. of Kansas, Lawrence, Kan. (25). 1889. **C E**

Bailey, E. P., Sub. Master of Brockton High School, 32 Silver Road, Brockton, Mass. (52). **E**

Bailey, Frank H., Com'dr, U. S. N., 15 Halsey St., Brooklyn, N. Y. (52). **D**

*Bailey, Solon Irving, Associate Prof. Astronomy, Harvard College Observatory, Cambridge, Mass. (50). 1901. **A**

*Bailey, Vernon, Department of Agriculture, Washington, D. C. (52). 1904. **F**

Bain, H. Foster, Director State Geological Survey, Urbana, Ill. (58). **E**

*Bain, Samuel M., Professor of Botany, University of Tennessee, Knoxville, Tenn. (50). 1902. **G**

*Bair, Joseph Hershey, Ph. D., Professor of Psychology, University of Colorado, Boulder, Colo. (52). 1905. **H K**

*Baird, John Wallace, University of Illinois, Urbana, Ill. (53). 1905. **H**

*Baird, Lucy H., 341 South 18th St., Philadelphia, Pa. (54). 1906. **I**

*Baird, Robert Logan, Principal, Denmark Academy, Denmark. Iowa. (53). 1907. **F**

Baker, A. A., V. S., 2537 State Street, Chicago, Ill. (58).

Baker, A. G., Springfield, Mass. (44).

*Baker, Carl F., Museu Goeldi, Para, Brazil. (54). 1906. **G**

Baker, E. F., 511 West 122d St., New York, N. Y. (57).

Baker, Edward Hall, B. A., M. D., 5444 Catharine St., Philadelphia, Pa. (58).

*Baker, Frank, M. D., 1728 Columbia Road, Washington, D. C. (31). 1886. F H K

Baker, Frank C., Curator and Asst. Secy., Chicago Academy of Science, Chicago, Ill. (58).

Baker, Henry B., M. D., R. F. D. 12, Holland, Mich. (58). I K

Baker, Hugh P., Pa. State College, State College, Pa. (51). G

*Baker, James H., LL.D., President of the University of Colorado, Boulder, Colo. (50). 1903. I

*Baker, Robt. H., Allegheny Observatory, Allegheny, Pa. (54). 1907. A

Baker, Smith, M. D., 37 Winston Building, Utica, N. Y. (54). K

*Bakewell, Charles Montague, Yale University, New Haven, Conn. (54). 1906. I

Balch, Dr. Alfred William, Assistant Surgeon, U. S. N., Navy Department, Washington, D. C. (52). C K

*Balch, Edwin Swift, 1412 Spruce St., Philadelphia, Pa. (51). 1903. E H

Balch, Francis Noyes, Hunneman & Balch, 60 State St., Boston, Mass. (50). F

Baldwin, Mrs. Gertrude H., 3 Madison Ave., Detroit, Mich. (34). H

Baldwin, Helen, 53 East 20th St., New York, N. Y. (54). C

Baldwin, Herbert B., Analytic and Consulting Chemist, 927 Broad St., Newark, N. J. (43).

Baldwin, Jesse A., 708 Reaper Block, Chicago, Ill. (58).

*Baldwin, Prof. J. Mark, Johns Hopkins Univ., Baltimore, Md. (46). 1898. H

*Baldwin, Hon. Simeon E., Associate Judge of Supreme Court of Errors, New Haven, Conn. (50). 1901. I

*Baldwin, S. Prentiss, 736 Prospect St., Cleveland, Ohio. (47). 1900. E

Ball, Albert, Asst. in Physics, Cooper Union, New York, N. Y. (58). B

*Ball, Carleton R., U. S. Dept. Agriculture, Washington, D. C. (49). 1902. G

*Ball, Elmer Darwin, Professor of Zoölogy and Entomology, State Agricultural College, Logan, Utah. (50). 1903. F

Ball, Miss Helen Augusta, 43 Laurel St., Worcester, Mass. (50). F

Ballard, C. A., Curator of Museum, State Normal School, Moorhead, Minn. (51).

*Balliet, Thomas M., New York Univ., Washington Square, New York, N. Y. (48). 1903. H I

Ballou, Henry A., Entomologist, Imperial Dept. Agriculture, Barbados, B. W. I. (56). F

*Bancroft, Frank Watts, Ph. D., Instructor in Physiology, East Hall, University of California, Walnut Creek, Cal. (50). 1907. F K

Bancroft, J. Sellers, M. E., 919 Pine St., Philadelphia, Pa. (51). D

Bancroft, Jessie H., Asst. Dir. Physical Training, Department of Education of the City of New York, 500 Park Ave., New York, N. Y. (58). L

*Bancroft, Wilder Dwight, Professor of Chemistry, Cornell University, Ithaca, N. Y. (50). 1901. B C

BANGS, LEMUEL BOLTON, M. D., 39 E. 72d St., New York, N. Y. (36).

*Bangs, Outram, 20 Pemberton Square, Boston, Mass. (47). 1900. F

*Banker, Howard J., Prof. Biology, Depauw Univ., Greencastle, Ind. (51). 1905. G

Banks, Chas. S., Entomologist, Bureau of Science, Manila, P. I. (57). F

Banta, Arthur M., Ph. D., Dept. of Biology, Marietta College, Marietta, Ohio. (53). F

Barber, René Raoul, B. Sc., F. R. G. S., Georgetown, Ontario, Canada. (56). C

Barbour, Miss Carrie Adeline, Dept. of Geology, Univ. of Nebraska, Lincoln, Neb. (53). E

*Barbour, Erwin Hinckley, Prof. of Geology, Univ. of Nebraska, Lincoln, Neb. (45). 1898. E

*Barbour, Thomas, care of S. Henshaw, Mus. Comp. Zoology, Cambridge, Mass. (52). 1907. F

Barck, Dr. Carl, 2715 Locust St., St. Louis, Mo. (52). K

*Bardeen, Charles Russell, Professor of Anatomy, University of Wisconsin, Madison, Wis. (50). 1901. F K

Bardeen, Charles William, 406 So. Franklin St., Syracuse, N. Y (52).

Barger, Thomas M., 2724 Garfield Ave., Clyde, Ill. (58).

Barhydt, Mrs. P. Hackley, 40 E. 70th St., New York, N. Y. (57).

Barkan, Adolph, M. D., LL.D., James Flood Building, San Francisco, Cal. (51). K

*BARKER, PROF. G. F., 3909 Locust St., Philadelphia, Pa. (13). 1875. B C

*Barker, Lewellys, F., M. D., Professor of Medicine, Johns Hopkins Univ., 6 E. Franklin St., Baltimore, Md. (57). 1908. K

Barker, Mrs. Martha M., 42 Eleventh St., Lowell, Mass. (31). E H

Barker, Vincent K., 207½ E. Kennedy St., Syracuse, N. Y. (54). F G

Barlow, John, Professor of Zoölogy, R. I. College of A. and M. Arts, Kingston, R. I. (51). F

*Barnard, Edward E., Yerkes Observatory, Williams Bay P. O., Wis. (26). 1883. A

Barnes, Carl Lewis, M. D., LL. B., 404 Ogden Ave., Chicago, Ill. (58). K

Barnes, Cecil, 402 Dearborn Ave., Chicago, Ill. (57). E

*Barnes, Charles Reid, Ph. D., Univ. of Chicago, Chicago, Ill. (33). 1885. G

Barnes, Miss Cora F., 6 E. 65th St., New York City. (57).

Barnes, Edward W., Box 446, New York, N. Y. (49).

Barnes, Fred Asa, Asst. Prof. of Civil Engineering, Cornell University, Ithaca, N. Y. (56). D

Barnes, Howard Turner, Sc. D., Department of Physics, McGill University, Montreal, Canada. (57). B

Barnes, Miss Mildred, 6 East 65th St., New York, N. Y. (57).

Barnes, Dr. William, Decatur, Ill. (57). K

Barnett, Mrs. Lelia Jefferson, Physics Building, Tulane University, New Orleans, La. (52). A

Barnett, Robert Crary, C. E., 510 Kansas City Life Bldg., Kansas City, Mo. (51). D

Barnhart, Arthur M., 185 Monroe St., Chicago, Ill. (42).

*Barnhart, John H., A. M., M. D., N. Y. Botanical Garden, Bronx Park, New York, N. Y. (49). 1903. G

Barnsley, George Thomas, Consulting Engineer, Fitzsimons Bldg., Pittsburgh, Pa. (51). D

*Barnum, Miss Charlotte C., Ph. D., U. S. Coast and Geodetic Survey, Washington, D. C. (36). 1896. A

Barnum, William M., 62 Cedar St., New York, N. Y. (57).

Barr, Charles Elisha, A. M., Professor of Biology, Albion College, Albion, Mich. (50). F

*Barr, John Henry, care of Smith Premier Typewriter Co., Syracuse, N. Y. (51). 1903 D

*Barrell, Joseph, Yale University Museum, New Haven, Conn. (51). 1905. E

Barrett, James Theophilus, First Asst. in Botany, Illinois. Agric. Exp. Sta., Univ. of Illinois, Urbana, Ill. (58). G

Barrett, Storrs Barrows, Secy. of Yerkes Observatory, Williams Bay, Wis. (58).

Barrie, Dr. George, The Highlands, Washington, D. C. (49). HI

Barringer, Daniel Moreau, Geologist and Mining Engineer, 460 Bullitt Building, Philadelphia, Pa. (50). DE

Barron, George D., Box 198, Rye, N. Y. (57).

*Barrows, Walter B., Professor of Zoology and Geology, Michigan Agricultural College, East Lansing, Mich. (40). 1897. F

Barrows, William Morton, Prof. New Hampshire Col., Durham, N. H. (57). **F**

Barry, D. E., 447 Lexington Ave., New York, N. Y. (57).

Bartholomew, C. E., Instructor in Entomology, Iowa State College, Ames, Iowa. (54). **F**

*Bartlett, Prof. Edwin J., Dartmouth College, Hanover, N. H. (28). 1883. **C**

*Bartlett, Francis, 40 State St., Boston, Mass. (50). 1906. **I**

Bartlett, George Miller, Instructor of Drawing and Descriptive Geometry, University of Michigan, Ann Arbor, Mich. (52). **D I**

Bartlett, John P., 205 West 57th St., New York, N. Y. (57).

*Bartley, Elias H., M. D., 21 Lafayette Ave., Brooklyn, N. Y. (33). 1894. **C**

*Barton, G. E., 419 N. High St., Millville, N. J. (46). 1898. **C**

*Barton, George Hunt, Boston Soc. of Natural History, 234 Berkeley St., Boston, Mass. (47). 1900. **E**

Barton, Philip Price, E. E., Sup't, Niagara Falls Power Co., 127 Buffalo Ave., Niagara Falls, N. Y. (50). **D E**

*Barton, Samuel M., Ph. D., The Univ. of the South, Sewanee, Tenn. (43). 1899. **A D**

Bartow, Chas. S., 33 West 73d St., N. Y. City. (57).

*Bartow, Edward, Ph. D., University of Illinois, Urbana, Ill. (47). 1906. **C**

*Bartsch, Paul, Ph. D., Smithsonian Institution, Washington, D. C. (52). 1906. **F**

Baruch, Edgar B. S., M. S., care of The Pacific Sugar Construction Co., Hamilton City, Cal. (56). **C**

*Barus, Carl, Ph. D., Wilson Hall, Brown Univ., Providence, R. I. (33). 1887. **B**

Barwell, John William, Waukegan, Ill. (47).

*Bascom, Miss Florence, Bryn Mawr College, Bryn Mawr, Pa. (42). 1897 **E**

Bashore, Harvey B. (Dr.), West Fairview, Pa. (46). **E**

*Baskerville, Charles, Professor of Chemistry, College of the City of New York, New York, N. Y. (41). 1894. **C E**

*Basquin, Olin H., Associate Professor of Physics, Northwestern University, Evanston, Ill. (53). 1906. **B D**

Bassett, Carroll Phillips, Ph. D., Civil and Consulting Engineer, Summit, N. J. (51). **D**

Bassett, William H., Chief Chemist American Brass Co., 146 Litchfield St., Torrington, Conn. (57). **C**

Bassoe, Peter, M. D., 34 Washington Street, Chicago, Ill. (58). **K**

*Batchelder, Charles Foster, 7 Kirkland St., Cambridge, Mass. (54). 1907.

Bates, Henry H., Ph. D., The Revere, 1201 M St. N. W., Washington, D. C. (52). A B D

*Bates, Rev. John Mallery, Red Cloud, Neb. (51). 1903. G I

*Bauer, Louis A., Ph. D., The Ontario, Washington, D. C. (40). 1892. A

Baugh, Margaret L., 15 West 67th St., New York, N. Y. (57).

Baumgartner, William Jacob, Asst. Prof. of Zoology, Univ. of Kansas, 1601 Tenn. St., Lawrence, Kans. (58).

*Bausch, Edw., P. O. Drawer 1033, Rochester, N. Y. (26). 1883. A B C F

Bausch, Henry, P. O. Drawer 1033, Rochester, N. Y. (41).

*Bawden, H. Heath, Univ. of Cincinnati, Cincinnati, Ohio. (51). 1905. F H

*Baxter, Gregory Paul, Chemical Laboratory, Harvard University, Cambridge, Mass. (54). 1906. C

*Bayley, Wm. Shirley, Assoc. Prof. of Geology, Univ. of Illinois, Urbana, Ill. (53). 1905. E

Beach, Miss Alice M., Brookside, Calistoga, Cal. (50). F

Beach, Charles Coffing, M. D., 54 Woodland St., Hartford, Conn. (50). F K

Beach, Miss Ella, Peekskill, N. Y. (57).

Beach, Henry Harris Aubrey, M. D., 28 Commonwealth Ave., Boston, Mass. (50). F K

*Beach, Spencer Ambrose, Iowa State College, Ames, Iowa. (41). 1900. G

Beal, James Hartley, Professor of Pharmacy, Scio College of Pharmacy, Scio, Ohio. (54). C

Beal, Walter Henry, Assistant, Office of Experiment Stations. U. S. Dept. Agriculture. Washington, D. C. (52).

*Beal, Wm. James, Ph. D., East Lansing, Mich. (17). 1880. G

Beal, Wm. R., Hotel Woodward, New York, N.Y. (57).

Beaman, George Herbert, 2232 Mass. Ave. N.W., Washington, D. C. (52). I

*Beardsley, Arthur E., M. S., Professor of Biology, Colorado State Normal School, Greeley, Colo. (50). 1901. F

Beates, Henry, Jr., M. D., President of State Board of Medical Examiners, 1504 Walnut St., Philadelphia, Pa. (51). K

Beattie, Prof. Frederick S., 112 N. High St., Bethlehem, Pa. (57). C

Beattie, J. C., D. Sc., F. R. S. E., South African College, Cape Town, S. Africa. (54). F

Beatty, A. Chester, 71 Broadway, New York, N. Y. (57).

Beatty, James W. F., Pitcairn, Pa. (51). D

Bebb, Edward C., U. S. Reclamation Service, Glendive, Montana. (52). E

*Beck, Carl, M. D., Professor of Surgery, New York Postgraduate Medical School, President of St. Mark's Hospital, 37 E. 31st St., New York, N. Y. (51). 1906. K

*Becker, Dr. Geo. F., 1700 R. I. Ave., Washington, D. C. (36). 1890. E

Becker, Irwin A., care of Michael Reese Hospital, 29th and Graveland Ave., Chicago, Ill. (58). K

Beckwith, E. B., 650 West Adams St., Chicago, Ill. (58).

Beckwith, T. D., Assistant Bacteriologist, North Dakota Agricultural College, Agricultural College, N. D. (57).

*Bedell, Frederick, Ph. D., Cornell Univ., Ithaca, N. Y. (41). 1894. A B

*Beebe, C. William, Curator of Ornithology, N. Y. Zoölogical Park, New York, N. Y. (53). 1905. F

*Beebe, Silas Palmer, Physiological Chemist to the Huntington Fund for Cancer Research, 216 Central Ave., Flushing, N. Y. (54). 1906. K

*Beede, Joshua William, Dept. of Geology, Indiana University, Bloomington, Ind. (50). 1906. E

Beekman, Gerard, 7 East 42d St., New York, N. Y. (49).

*Beer, Edwin, M. D., 116 West 58th St., New York, N. Y. (56). 1908. K

Beers, Everett Jacob, Eau Gallie, Fla. (57). B C

Beers, William H., Jr., Chemist and Bacteriologist, Columbia, S.C. (58). C

Beeson, Jasper Luther, Professor, Georgia Normal and Industrial College, Milledgeville, Ga. (57). C

Behr, Edward, C. E., 838 Carroll St., Brooklyn, N. Y. (57). D

*Behrend, Bernard Arthur, C. E., E. E., 2102 Grand Ave., Milwaukee, Wis. (50). 1903. D B

Beidler, Francis, 115 Adams St., Chicago, Ill. (58).

Belknap, Henry Wyckoff, 40 Chestnut St., Salem, Mass. (57).

*Bell, Albert T., Univ. Place Sta., Lincoln, Neb. (52). 1903. G

*Bell, Alex. Graham, Ph. D., 1331 Conn. Ave. N.W., Washington, D. C. (26). 1879. B H I

Bell, C. M., M. D., 320 Fifth Ave., New York, N. Y. (36).

Bell, James Munsie, Bureau of Soils, U. S. Dept. Agric., Washington, D. C. (58). C

*Bell, John Everett, M. E., care of The Babcock & Willcox Co., 85 Liberty St., New York, N. Y. (53). 1906. D

Bell, J. Finley, M. D., Englewood, New Jersey. (57). K

*Bell, Robert, M. D., LL.D., F. R. S., Geol. Survey, Ottawa, Can. (38). 1889. E F

Bell, William B., Asst. Prof. Zoölogy and Physiology, Agricultural College, N. D. (56). F

Beller, William Frank, B. S., Chief Liquidating Clerk, New York Custom House, 51 East 123d St., New York, N. Y. (56). **F H I**

Belling, John, Florida Agricultural Experiment Station, Gainesville, Fla. (58).

Bellows, Horace M., M. D., Huntingdon Valley, Pa. (51). **K**

*Belmont, August, 23 Nassau St., New York, N. Y. (50). 1906. **I**

BELMONT, HON. PERRY, 580 Fifth Ave , New York. (57).

*Beman, Wooster W., Univ. of Michigan, Ann Arbor, Mich. (34). 1886. **A**

Bement, A., Consulting Mining and Mech. Engineer, American Trust Bldg., Chicago, Ill. (52). **B C E**

Béndrat, Rev. Thomas Albert, Constableville, N. Y. (52). **E G**

*Benedict, Francis Gano, Nutrition Laboratory, Vila Street, Boston, Mass. (55). 1908. **C**

Benedict, Harris Miller, Instructor in Biology, University of Cincinnati, 554 Evanswood Place, Cincinnati, Ohio. (52). **F**

Benedict, Wm. de L., Mining Engineer, 43 Cedar St., New York, N. Y. (57). **D**

Bengston, Rev. Carl J., Rock Island, Ill. (58).

*BENJAMIN, MARCUS, U. S. National Museum, Washington, D. C. (27). 1887. **C I**

*Benneson, Miss Cora Agnes, A. M., LL. B., 4 Mason St., Cambridge, Mass. (47). 1899. **I**

*Bennett, A. A., Professor of Chemistry, Iowa State College, Ames, Iowa. (54). 1906. **C**

Bennett, Charles W., Coldwater, Mich. (50). **E**

Bennett, Henry C., Hotel Longacre, 157 West 47th St., New York, N. Y. (43).

Bennett, John N., Prof. of Mathematics, Doane College, Crete, Neb. (57). **A**

Bennett, Lee F., Prof. of Zoology and Geology, Valparaiso University, Valparaiso, Ind. (58). **F**

*Bennett, William Z., Ph.D., Director of Chemical Laboratory, Univ. of Wooster, Wooster, Ohio. (48). 1903. **C**

Bentley, Gordon M., Instructor in Zoology and Entomology, University of Tennessee, Knoxville, Tenn. (54). **F**

*Bentley, I. Madison, Assistant Professor of Psychology, Cornell University, Ithaca, N. Y. (54). 1906. **K**

*Bentley, William B., Professor of Chemistry, Ohio University, Athens, Ohio. (51). 1903. **C**

Bentley, Wilson A., Jericho, Vt. (48).

Benton, Frank, M. S., 925 N. St. N. W., Washington, D. C. (54). **F**

*Benton, John Robert, Ph. D., Prof. of Physics and Electrical Engineering, Univ. of Florida, Gainesville, Fla. (51). 1906. **B**

Berg, William N., Assistant in Physiological Chemistry, Columbia Univ., New York, N. Y. (55). **C**

Bergen, J. Y., 47 Raymond St., No. Cambridge, Mass. (57).
Bergen, Van Brunt, Shore Road and 77th St., Brooklyn, N. Y. (54). I
Berger, E. W., Ph. D., Entomologist, Fla. Exp. Sta., Gainesville, Fla. (57). F
*Bergey, David H., S. E. cor. 34th and Locust Sts., Philadelphia, Pa. (48). 1903. K
*Bergström, John Andrew, Ph. D., Professor of Education, Indiana University, Bloomington, Ind. (50). 1901. I
Berkeley, Wm. N., Ph. D., Food Lab., Appraisers Stores, Philadelphia, Pa. (49). C
*Berkey, Charles Peter, Ph. D., Tutor in Geology, Columbia University, New York, N. Y. (50). 1905. E
Bernheimer, Charles L., P. O. Box 1158, New York, N. Y. (49).
Berolzheimer, Daniel D., care of Arlington Chemical Co., Yonkers, N. Y. (55). C H
Berry, Daniel, M. D., Carmi, Ill. (41). B C E
Berry, Edgar H., care of Edw. A. Miller, 21 East 101st St., New York, N. Y (50). D
*Berry, Edward W., Johns Hopkins Univ., Baltimore, Md. (50). 1905. G
Berry, John Wilson, C. E., Pittston, Pa. (47).
*Bessey, Charles Edwin, Ph. D., LL. D., Univ. of Nebraska, Lincoln, Neb. (21). 1880. G
*Bessey, Ernst A., Subtropical Laboratory, Miami, Fla. (49). 1901. G
Bessey, J. Mortimer, M. D., 1814 Adams St., Toledo, Ohio. (51). K
Best, George Newton, M. D., Rosemont, N. J. (54). K
*Bethune, Rev. C. J. S., Ontario Agricultural College, Guelph, Ontario, Canada. (18). 1875. F
Betten, Cornelius, Lake Forest, Ill. (56). F
Betts, Sam'l R., Kuhn-Loeb Building, 52 William St., New York, N. Y. (57).
Betts, William Royston, M. D., 1331 Eighth St., New Orleans, La. (55). K
Beutenmüller, Wm., Dept. Entomology, Am. Mus. Nat. History, New York, N. Y. (57). F
Bevier, George, Jr., Stanford University, Cal. (55). D
Bevier, Miss Isabel, Univ. of Illinois, Urbana, Ill. (46). C
*Beyer, Geo. Eugene, Prof. of Biology, Tulane University, New Orleans, La. (54). 1906. F G
*Beyer, Prof. Samuel W., Iowa Agricultural College, Ames, Iowa. (47). 1900. E
*Bibbins, Arthur Barneveld, Curator and Instructor in Geology and Mineralogy, The Woman's College, The Somerset, 2600 Maryland Ave., Baltimore, Md. (54). 1906. E

*Bickmore, Prof. Albert S., Amer. Mus. Nat. History, Central Park, New York, N. Y. (17). 1880. H

Bicknell, George H., Adj. Prof. of Ophthalmology and Otology, University of Nebraska College of Medicine, Omaha, Neb. (55). K

Biddle, James G., 1024 Stephen Girard Building, Philadelphia. Pa. (33).

*Bien, Julius, 140 Sixth Ave., New York, N. Y. (34). 1905. E H

Bierbaum, Christopher H., M. E., Consulting Engineer, 616 Prudential Building, Buffalo, N. Y. (53). D

Bierwirth, Julius C., M. D., 137 Montague St., Brooklyn, N. Y (51). K

*Bigelow, Prof. Frank H., U. S. Weather Bureau, Chicago, Ill. (36). 1888. A B

Bigelow, Harriet W., Acting Director, Smith College Observatory Northampton, Mass. (57). A

Bigelow, Henry Bryant, Mus. Comp. Zöology, Cambridge, Mass. (52).

Bigelow, John, 21 Grammercy Park, New York N. Y. (57).

*Bigelow, Maurice Alpheus, Ph. D., Professor of Biology, Teachers College, Columbia, Univ., New York, N. Y. (51). 1903. F

*Bigelow, Robert Payne, Ph.D., Mass. Institute of Technology, Boston, Mass. (51). 1903. F

*Bigelow, S. Lawrence, Ph.D., Asst. Professor of General Chemistry, University of Michigan, Ann Arbor, Mich. (51). 1903. C

*Bigelow, W. D., Bureau of Chemistry, Department of Agriculture, Washington, D. C. (53). 1906. G

Bigelow, Dr. Wm. Sturgis, 56 Beacon St., Boston, Mass. (57). K

Bigney, Andrew J., Professor of Biology and Geology, Moores Hill College, Moores Hill, Ind. (50). E F

Bijur, Moses, 136 Water St., New York, N. Y. (57).

Billings, Miss E., 279 Madison Ave., New York, N. Y. (50). I

Billings, Dr. Frank, 35 East 22d St., Chicago, Ill. (58). K

Biolley, Pablo, Prof., San Jose, Costa Rica, C. A. (56). F

Bird, Henry, Rye, N. Y. (55). F

Bird, Robt. Montgomery, Ph. D., School of Chemistry, Univ. of Virginia, Charlottesville, Va. (57). C

Birdsall, Mrs. W. R., Wellsville, N. Y. (57).

*Birge, Edward A., Dean of College of Letters and Science, University of Wisconsin, Madison, Wis. (53). 1905. F

*Bishop, Howard Beckey, B. S., Chemist, General Chemical Co., 609 Greene Ave., Brooklyn, N. Y. (56). 1908. C

Bishop, James Hall, 2520 Gough St., San Francisco, Cal. (51). H

Bishop, Mrs. Josephine Hall, 2309 Washington St., San Francisco, Cal. (51). H

*Bishop, L. B., M. D., 356 Orange St., New Haven, Conn. (50). 1906. I

Bishop, Rev. Sam'l H., 500 West 122d St., New York City. (57).

Bishopp, Fred C., Bur. of Entomology, U. S. Dept. Agriculture, Washington, D. C. (54). F

*Bissell, G. W., Michigan Agriculture College, East Lansing, Mich. (53). 1905. D

Bissell, Leslie Dayton, Ph.D., St. Paul's School, Concord, N. H. (50). B

Bissing, William F., 2 Rector St., New York, N. Y. (55). B

Bitner, Henry F., Ph. D., Teacher of Natural Science, First Pennsylvania State Normal School, Millersville, Pa. (52). BCG

*Bitting, Katherine Golden, Lafayette, Ind. (42). 1897. G

*Bixby, Col. W. H., Corps of Engineers, U. S. A., U. S. Engineer's Office, Room 506, Federal Bldg., Chicago, Ill. (34). 1892. D

Black, N. Henry, 15 Ellery St., Cambridge, Mass. (50). B

Blackall, Clarence Howard, Architect, 20 Beacon St., Boston, Mass. (50). D

Blackburn, Isaac Wright, M. D., Pathologist, Government Hospital for the Insane, Washington, D. C. (55). K

Blackman, Elmer E., Nebraska State Historical Society, Lincoln, Neb. (58). H

Blackmore, Henry Spencer, 206 S. 9th Ave., Mount Vernon, N. Y. (49).

*Blackshear, Edward Levoisier, Principal of the Prairie View State Normal and Industrial College, Prairie View, Texas. (52). 1907. HI

*Blackwelder, Eliot, University of Wisconsin, Madison, Wis. (55). 1908. E

Blackwood, A. L., M. D., 31 Washington St., Chicago, Ill. (58). K

*Blain, Alexander W., Jr., M. D., Harper Hospital, Detroit, Mich. (52). 1906. F

Blaine, Anita McCormick, 344 East Erie St., Chicago, Ill. (58).

*Blair, Andrew Alexander, 406 Locust St., Philadelphia, Pa. (44). 1896. C

Blaise, T. T., Mason City, Iowa. (58).

*Blake, Clarence J., M. D., 226 Marlborough St., Boston, Mass. (24). 1877. BF

*Blake, Francis, Auburndale, Mass. (23). 1874. AB

*Blake, William Phipps, Mill Rock, New Haven, Conn. (54). 1906. E

Blakeman, Mrs. Birdseye, 9 E. 44th St., New York, N. Y. (49).

*Blaker, Ernest, Ph.D., Cornell Univ., Ithaca, N. Y. (51). 1907. B

Blakeslee, Albert Francis, Dept. of Botany, Conn. Agric. College, Storrs, Conn. (52). G

Blakiston, Kenneth M., 1012 Walnut St., Philadelphia, Pa. (54).
*Blanchard, Arthur Horace, C. E., Associate Professor of Civil Engineering, Brown University, Providence, R. I. (52). 1905. B D E
Blanchard, Charles A., Wheaton College, Wheaton, Ill. (58).
Bland, John Carlisle, Engineer of Bridges, Penna. Lines West of Pittsburg, Room 1115 Union Sta., Pittsburg, Pa. (51). D
Blankinship, Joseph William, Ph. D., 4274A Florida Ave., St. Louis, Mo. (51). G
*Blasdale, Walter Charles, Ph. D., Instructor in Chemistry, University of California, Berkeley, Cal. (50). 1908. C
*Bleile, Albert M., M. D., State University, Columbus, Ohio (37). 1896. F
Bleininger Albert Victor, University of Illinois, Urbana. Ill. (58).
Blish, W. G., Niles, Mich. (33) B D
*Bliss, Charles B., Ph. D., Hampden, Mass. (49). 1906. H I
Bliss, Hon Cornelius N., P. O. Box 1499, New York, N. Y. (49).
*Bliss, Gilbert Ames, Princeton Univ., Princeton, N. J. (55). 1907. A
Bliss, Mrs. Wm. H., 6 East 65th St., New York City. (57).
*Blodgett, Frederick H., Johns Hopkins Univ., Baltimore, Md. (52). 1905. G
Bloodgood, Joseph Colt, Asst. Prof. Surgery, Johns Hopkins Univ., Baltimore, Md. (55). K
Bloomhardt, Dr. Fred H., Altoona, Pa. (58).
Blount, Henry Fitch, "The Oaks," Washington, D. C. (32). B I
Blum, William, Instructor in Chemistry, University of Utah, Salt Lake City, Utah. (55). C
Blumenthel, Sidney, 329 West 87th St., New York, N. Y. (57).
Blunt, Col. Stanhope English, Ordnance Dept., U. S. A., Commanding, Springfield Armory, Springfield, Mass. (55). D
Boas, Emil L., 37 Broadway, New York, N. Y. (50). I
*Boas, Dr. Franz, Franklin Ave., Grantwood, N. J. (36). 1888. H I
*Bodine, Donaldson, Professor of Geology and Zoölogy, Wabash College, Crawfordsville, Ind. (45). 1899. E F
Boericke, F. A., M. D., 1101 Arch Street, Phila., Pa. (58). K
Boerner, Wunibald R., Ravinia, Ill. (54). D
*Bogert, Marston Taylor, Havemeyer Hall, Columbia Univ., New York, N. Y. (47). 1900 C
Boggs, Lucinda Pearl, 811 West Illinois St., Urbana, Ill. (57)
Bogue, Edward A., M. D., 63 West 48th St., New York, N. Y. (57). K
Boleng, Lee Hayes, 1121 S. 8th Street, Manitowoc, Wis. (58)
Bolles, Newton Alden, 1457 Ogden St., Denver, Colo. (50). C

*Bolley, Henry L., Professor of Botany and Zoölogy, Agricultural College, North Dakota. (39). 1892. **F G**

*Bolton, Thaddeus, L., Ph. D., Dept. Philosophy, University of Nebraska, Lincoln, Neb. (50). 1901. **H I**

*Bond, Geo. M., 141 Washington St., Hartford, Conn. (33). 1885. **D**

Bond, R. I., M. D., Hartshorne, Ind. T (50). **K**

Bondurant, Eugene Du Bose, M. D., Prof. Pathology and Bacteriology. University of Alabama, Mobile, Ala. (54). **K**

*Bonnet, Frederic, Jr., 16 Harvard St., Worcester, Mass. (53). 1906. **C**

*Bookman, Samuel, Ph. D., 9 E. 62d St., New York, N. Y. (47). 1900. **C**

Boon, John Daniel, Professor of Physics, Chemistry and Geology, Polytechnic College, Ft. Worth, Texas. (50). **B C E**

Booraem, J. V. V., 204 Lincoln Place, Brooklyn, N. Y. (36).

Booth, Edward, Instructor in Chemistry, Univ. of California, Berkeley, Cal. (50). **C**

*Booth, Miss Mary A., 60 Dartmouth St., Springfield, Mass. (34). 1894. **F G I**

Boretti, Albert F., 80 East Concord St., Boston, Mass. (58). **K**

Boskowitz, Geo. W., M. D., 140 West 71st St., New York City. (57). **K**

Boucek, Anthony J., M. D., 624 Chestnut St., Allegheny, Pa. (51). **K**

*Bouton, Charles Leonard, Instructor in Mathematics, Harvard University, Cambridge, Mass. (50). 1901. **A**

*Boutwell, John Mason, U. S. Geol. Survey, Washington, D. C. (46). 1905. **E**

*Bovaird, David, Jr., M. D., 126 W. 58th St., New York, N. Y. (57). 1908. **K**

*Bowditch, Charles P., 28 State St., Boston, Mass. (43). 1897. **H**

*Bowditch, Prof. H. P., Jamaica Plain, Boston, Mass. (28). 1880. **B F H**

Bower, William Clinton, M. D., Lebanon, Kan. (55). **K**

*Bowie, William, U. S. Coast and Geodetic Survey, Washington, D. C. (57). 1907. **A D E**

Bowker, R. R., 298 Broadway, New York, N. Y. (43). **B**

Bowman, Charles Henry, Professor of Mechanics and Electrical Engineering, State School of Mines, Butte, Mont. (51). **D**

*Bownocker, J. A., Professor of Inorganic Geology, Ohio State University, Columbus, Ohio. (48). 1905. **E**

*Bowser, Prof. E. A., Rutgers College, New Brunswick, N. J. (28). 1881.

Boyce, James, Chief Chemist, Amer. Cotton Oil Co., 225 East 19th Street, Chicago, Ill. (58). **C**

*Boyd, James E., Ohio State Univ., Columbus, Ohio. (46). 1899. B D
*BOYE, MARTIN H., M. D., Coopersburg, Pa. (1). 1896. C
Brace, Edith M., High School, Bloomfield, N. J. (54). F G
BRACKENRIDGE, GEORGE W., San Antonio, Texas. (41). I
Brackett, Byron B., Ph. D., Electrical Engineering, Clarkson School of Technology, Potsdam, N. Y. (46). B
*Brackett, C. F., Prof. of Physics, Princeton University, Princeton, N. J. (19). 1875. B
*Brackett, Frank Parkhurst, Professor of Mathematics, Pomona College, Claremont, Cal. (50). 1906. A
Brackett, Mary M., 604 West 115th St., New York, N. Y. (54). G
Brackett, Richard N., Clemson College, S. C. (37). 1891. C E
*Bradford, Royal B., Rear Admiral U. S. N., 1522 P St. N.W., Washington, D. C. (31). 1891. B D
BRADLEY, ARTHUR C., Newport, N. H. (43).
Bradley, C. E., Experiment Station, Corvallis, Ore. (54). C
Bradley, Charles S., 41 Park Row, New York, N. Y. (40).
Bradley, J. Chester, Cornell Univ., Ithaca, N. Y. (54). F
BRADLEY, MILTON, Springfield, Mass. (44). B
BRADLEY, M. J., 373 Fulton St., Brooklyn, N. Y. (43).
BRADLEY, STEPHEN ROWE, Nyack, New York. (51)
*Bradley, Walter Parke, Ph. D., Professor of Chemistry, Wesleyan University, Middletown, Conn. (50). 1906. C
Brady, William, Supt. Ill. Steel Works of Chicago, 7642 Marquette Ave., Chicago, Ill. (58). C
Brainerd, Erastus, care of The Post Intelligencer, Seattle, Wash. (52). H
Bramwell, Geo. W., 335 Broadway, New York, N. Y. (43). D
*Branner, Prof. John C., Stanford University, Cal. (34). 1886. E F
Brannon, Melvin Amos, 207 Chestnut St., Grand Forks, N. Dak. (55).
Branson, Edwin Boyer, Ph. D., Associate Professor Geology Oberlin College, 20 S. Prospect St., Oberlin, O. (57). E
*Brasefield, Stanley Eugene, Instructor in Mathematics, Lafayette College, Easton, Pa. (50). 1906. A
*BRASHEAR, JOHN A., Allegheny, Pa. (33). 1885 A B D
Brassill, Miss Sarah Ellen, South Weymouth, Mass. (47). F G
Braunnagel, Jules L. A., M. D., P. O. Box 925, San Antonio, Texas. (50). F
*Bray, William L., Professor of Botany, Univ. of Texas, Austin, Texas. (49). 1901. G
Brayton, Sarah H., M. D., The Hereford, Evanston, Ill. (33).
Breed, Robert Stanley, Ph. D., Department of Biology and Geology, Allegheny College, Meadville, Pa. (51). F

Breese, Burtis Burr, Prof. of Psychology, Univ. of Cincinnati, Cincinnati, Ohio. (54). K

Breidenbaugh, Prof. Edward S., Pennsylvania College, Gettysburg, Pa. (57).

*Brenke, William Charles, 1833 L St., Lincoln, Neb. (56). 1908. A

Brett, George Monroe, Hartley Hall, 115th St. and Amsterdam Ave., New York, N. Y. (54). A D

Bretz, J. Harlan, Franklin High School, Seattle, Washington. (57). E

*Brewer, Charles Edward, Professor of Chemistry, Wake Forest College, Wake Forest, N. C. (50). 1903. C

*Brewer, Prof. Wm. H., 418 Orange St., New Haven, Conn. (20). 1875 E F I

Brewster, Edwin Tenney, Instructor in Natural Sciences, Phillips Academy, Andover, Mass. (51). F G

Brewster, Frank H., M. E., 90 Bidwell Parkway, Buffalo, N. Y. (51). D

Brewster, Mary Jones, M. D., Prof. Physiology and Hygiene, Smith College, Northampton, Mass. (54). K

BRICE, JUDGE ALBERT G., 901 Hennen Bldg., New Orleans, La. (32). H

Brichett, J. G., Cardwell, Mo. (58).

*Bridge, Norman, M. D., 800 Auditorium Bldg., Los Angeles, Cal. (51). 1906. K

Briggs, Edward Cornelius, Prof. of Dental Materia Medica and Therapeutics, Harvard Medical School, Boston, Mass. (50). F K

*Briggs, Lyman J., U. S. Dept. Agriculture, Washington, D. C. (48). 1901. B

Briggs, Wallace Alvin, M. D., 1300 I St., Sacramento, Cal. (51). K

*Brigham, Albert Perry, Professor of Geology, Colgate Univ., Hamilton, N. Y. (41). 1900. E

[Brigham, William T., Director of B. P. Bishop Museum of Polynesian Ethnology and Natural History, Honolulu, H. T. (54). H

Bright, Richard Riggs, Ordnance Bureau, Navy Dept., Washington, D. C. (52). D

*Brill, George M., Consulting Engineer, 1134 Marquette Building, Chicago, Ill. (51). 1906. D

Brill, Nathan Edwin, M. D., 48 West 76th St., New York, N. Y. (54). H K

*Brinckerhoff, Walter Remsen, Public Health and Marine Hospital Service, Honolulu, Hawaii. (55). 1907. K

Bristol, John I. D., Metropolitan Building, 23d St. and Madison Ave., New York, N. Y. (49).

*Bristol, Wm. H., 36 W. 59th St., New York, N. Y. (36). 1894. D

*Britton, N. L., Ph. D., N. Y. Botanical Garden, Bronx Park, New York, N. Y. (29). 1882. E G

BRITTON, WILEY, Special Pension Examiner, Springfield, Mo. (40). F

*Britton, Wilton Everett, Ph. D., State Entomologist, Agricultural Ex. Sta., New Haven, Conn. (54). 1906. F

Broadhurst, Jean, Dept. Biology, Teachers College, New York, N. Y. (54). G

Brock, Henry M., S. J., Professor of Physics, Holy Cross College, Worcester, Mass. (57). B

*Brock, Reginald Walter, Professor of Geology, School of Mining, Kingston, Ont., Canada. (54). 1908. E

Brodrick, C. T., 29 Weld Hall, Cambridge, Mass. (57). E

Bronson, Dr. E. B , 10 W. 49th St., New York, N. Y. (49)

Brooke, W. E., 405 Oak St., S. E., Minneapolis, Minn. (58).

Brookover, Charles, Univ. of Chicago, Chicago, Ill. (55). F

*Brooks, Alfred Hulse, U. S. Geological Survey, Washington, D. C. (52). 1905. E

Brooks, Charles, Durham, N. H. (53). G

Brooks, J. Ansel, Instructor in Mech. Drawing, Brown University, Providence, R. I. (54). D

Brooks, Paul P. B., Science Teacher, State Line, Ind. (58). B

*Brooks, Wm. Keith, Ph. D., Johns Hopkins Univ., Baltimore, Md. (52). 1903. F

Brooks, Prof. Wm. P., Amherst, Mass. (38). C F

*Brooks, Wm. R., D. Sc., Director Smith Observatory and Professor of Astronomy, Hobart College, Geneva, N. Y. (35). 1886. A B D

Broomell, Francis E., 99 Washington St., Chicago, Ill. (58).

Brown, Judge Addison, 45 W. 89th St., New York City. (57). I

*Brown, Amos Peaslee, Ph. D., Professor of Geology and Mineralogy, Univ. of Pennsylvania, Philadelphia, Pa. (50). 1906. E

*Brown, Arthur Erwin, Secy. Zoological Society of Philadelphia, 1208 Locust St., Philadelphia, Pa. (51). 1905. F

Brown, Austin H., Jr., Genl. Mgr. Trinity Copper Co., Kennett, Cal. (52). D

Brown, Calvin S., D. Sc., Ph. D., University, Miss. (54). E F G

Brown, C. Arthur, 218 Washington St., Lorain, Ohio. (56). C

Brown, Charles W., Dept. Geology, Brown Univ., Providence, R. I. (54). E

Brown, Rev. Clement, 1440 M St., N. W., Washington, D. C. (52).

Brown, D. Walter, Ph. D., Patent Counsel, 5 Beekman St., New York, N. Y. (55). D

Brown, Edgar, Botanist in Charge of Seed Laboratory, Department Agriculture, Washington, D. C. (52). G

Brown, Elias G., A. B., M. D., Founder and Director of the Mountain School for boys, Allaben, Ulster Co., 481 West 145th St., New York, N. Y. (56). **H K L**

*Brown, Elisha Rhodes, President Stafford Savings and National Banks, 50 Silver St., Dover, N. H. (50). 1907. **I**

*Brown, Hon. Elmer Ellsworth, Commissioner of Education, Washington, D. C. (57). 1907. **I**

*Brown, Ernest William, Yale University, New Haven, Conn. (53). 1906. **A B**

Brown, Fay Cluff, Merwick, Princeton, N. J. (55) **B**

Brown, Frederick M., Counsellor at Law, 54 Wall St., New York, N. Y. (58).

Brown, Frederick Tilden, 14 E. 58th St. New York, N. Y. (57). **K**

Brown, George A., 1111 N. Prairie St., Bloomington, Ill. (58).

*Brown, George Lincoln, Professor of Mathematics and Astronomy, State Agricultural College, Brookings, South Dakota. (55). 1907. **A**

Brown, Glenn V., 214 DeKalb Sq., Philadelphia, Pa. (51). **B C E**

Brown, John R., Asst., Northwestern Univ., 1918 Sherman Ave., Evanston, Ill. (58). **B**

*Brown, Joseph Stanford, 489 Fifth Ave., New York, N. Y. (50). 1906. **D**

Brown, Lucius Polk, 310 Union St., Nashville, Tenn (54). **C E**

Brown, Newton H., A. and M. College of Texas, College Station, Texas. (48). **B D**

*Brown, Robert, Yale University Observatory, New Haven, Conn. (11). 1874. **A B E F G**

*Brown, Mrs. Robert, Observatory Place, New Haven, Conn. (17). 1874. **F G**

Brown, Robert Marshall, Instructor in Geography, State Normal School, Worcester, Mass. (48). **E**

Brown, Samuel B., W. Va. University, Morgantown, W. Va. (40). **E**

*Brown, Stewardson, 20 E. Penn St., Germantown, Philadelphia, Pa. (50). 1906. **I**

Brown, Thomas C. (57). **E**

Brown, Wm. Adams, 114 East 30th St., N. Y. (57).

Brown, William George, Prof. of Chemistry, Univ. of Missouri, Columbia, Mo. (58). **C**

Browne, Arthur Lee, 213 Courtland St., Baltimore, Md. (56.) **C**

*Browne, Arthur Wesley, Ph. D., Asst. Prof. of Chemistry, Cornell University, 957 E. State St., Ithaca, N. Y. (57). 1908. **C**

Browne, Charles A., Jr., Ph. D., 604 W. 115th St., New York, N. Y. (52). **C**

Browne, W. R., C. E., Bethany Beach, Sussex Co., Deleware. (54). **D**

Brownell, Silas B., 71 Wall St., New York, N. Y. (36).

Browning, Charles Clifton, M. D., Pottenger Sanatorium, Monrov: Cal. (51). K

BROWNING, J. HALL, 199 Chambers St., New York, N. Y. (57)

*Browning, Philip Embury, Kent Chemical Laboratory, Yale University, New Haven Conn. (46). 1903. C

*Browning, William, M. D., Professor of Diseases of the Mind and Nervous System, Long Island College Hospital, 54 Leffert Place, Brooklyn, N. Y. (53). 1906. K

Bruckner, Arthur, Instructor in Physics, College of the City of New York, New York, N. Y. (55). B

*Brues, Charles Thomas, Milwaukee Public Museum, Milwaukee, Wis. (54). 1906. F

Bruggerhof, F. W., 33 Barclay St., New York, N. Y. (49).

Brundage, Albert H., M. D., Milwaukee Medical College, 2404 State St., Milwaukee, Wis. (43). F G H

Bruner, Frank G., care of Board of Education, 808 Tribune Building, Chicago, Ill. (55). H K

*Bruner, Henry Lane, Ph. D., 360 S. Ritter Ave., Indianapolis, Ind. (50). 1906. F

*Bruner, Lawrence, Professor of Entomology, Univ. of Nebraska, Lincoln, Neb. (50). 1901. F

BRUNTON, DAVID WILLIAM, Mining Engineer, 865 Grant Ave., Denver, Colo. (50) D E

*Brush, Charles F., 1003 Euclid Ave., Cleveland, Ohio. (35). 1886. B

*BRUSH, PROF. GEORGE J., Yale Univ., New Haven, Conn. (4). 1874. C E

Bryan, Enoch A., President, The State College of Washington, Pullman, Wash. (54). I

*Bryan, William Alanson, B. P. Bishop Museum, Honolulu, H. T. (55). 1908. F

*Bryan, Prof. William L., Indiana Univ., Bloomington, Ind. (49). 1900. H

Bryant, Miss Dixie Lee, Ph. D., 464 W. Adams St., Chicago, Ill. (42). E

Bryant, Edward S., 914 Oliver Bldg., 141 Milk St., Boston, Mass. (56). E

*Bryant, Henry G., 2013 Walnut St., Philadelphia, Pa. (51). 1905. E

*Bryant, Owen, Cohasset, Mass. (54). 1906. K

Bryant, W. Sohier, M. D., 57 West 53d St., New York, N. Y. (54). K

*Bryce, Rev. Dr. Geo., 189 Colony Street, Winnipeg, Manitoba, Canada. (57). 1880.

Bryson, Andrew, C. E., President Brylgon Steel Casting Co., New Castle, Del. (51). D

Buchanan, James Isaac, Vice-President Pittsburg Trust Co., Conestoga Building, Pittsburg, Pa. (51). I

*__Bucher__, John Emery, Associate Professor of Organic Chemistry, Brown University, Providence, R. I. (54). 1908. C

*__Buchner__, Edward Franklin, Ph. D., Professor of Philosophy and Education, University of Alabama, University, Ala. (49). 1901. H

Buck, Thomas, 5825 Kimbark Ave., Chicago, Ill. (58). A

Buckham, Mrs. Geo., 29 East 29th St., New York City. (57).

*__Buckhout__, W. A., School of Agriculture, State College, Pa. (20). 1881. G

Buckingham, Chas. L., 38 Park Row, New York, N. Y. (28).

*BUCKLEY, ERNEST ROBERTSON, Ph. D., Director, Bureau of Geology and Mines and State Geologist of Missouri, Rolla, Mo. (52) 1905. E

Budington, Robert A., Dept. Zoology, Wesleyan Univ., Middletown, Conn. (52). F K

Bües, Christian Rudolf August, care of Juan E. Talladares Apartado 987, Lima, Peru. (56). F

*__Buffum__, Burt C., Worland, Wyoming. (42). 1906. G

Bull, Coates P., Assistant Professor Agr., Univ. of Minnesota, St. Anthony Park, Minn. (52). D G

*__Bullard__, Warren Gardner, Ph. D., Associate Professor of Mathematics, Syracuse University, Syracuse, N. Y. (50). 1906. A

Bullene, Mrs. Emma F. Jay, 1409 Broadway, Denver, Colo. (50). H

Bullitt, James B., M. D., Professor of Anatomy, Univ. of Mississippi, University, Miss. (55). K

*__Bumpus__, Prof. Hermon C., Am. Mus. Nat. Hist., Central Park, West 77th St., New York, N. Y. (49). 1900.

Bundy, Dr. A. D., Cleveland Block, Osage, Iowa. (58). K

Bunker, Henry A. M. D., 158 6th Ave., Brooklyn, N. Y. (50). I

Burbank, John E., In charge of U. S. Magnetic Observatory, Cheltenham, Md. (57). B

*BURBANK, LUTHER, Santa Rosa, Cal. (50). 1901. G

Burchard, Anson W., 44 Broad St., New York, N. Y. (51). D

Burdge, Franklin, 325 West 57th St., New York City. (57).

Burdick, Lewis Dayton, Oxford, N. Y. (52). I

*__Burgess__, Albert F., Bureau of Entomology, U. S. Dept. Agriculture, Washington, D. C. (54). 1906. F

*__Burgess__, Edward S., 11 W. 88th St., New York, N. Y. (47). 1901. G

*__Burgess__, George Kimball, Ph. D., Bureau of Standards, Washington, D. C. (55). 1907. B

*__Burgess__, Thomas J. W., M. D., Medical Supt. Protestant Hospital for the Insane, Montreal, Can. (38). 1889. G E

Burk, W. E., Chief Chemist and Bacteriologist, Louisville Water Co., 1112 Hepburn Ave., Louisville, Ky. (55). **C K**

Burke, M. D., C. E., 18 East Fourth St., Cincinnati, Ohio. (50). **A B C D E**

Burke, Raymond H., Dept. of Geology, Miami University, Oxford, Ohio. (58). **E**

Burke, Robert E., S. B., Boston Normal School, Boston, Mass. (50). **C**

*Burkett, Charles William, Ph. D., Director Agr. Exp. Sta., Manhattan, Kansas. (53) 1906. **C**

Burleigh, Geo. Wm., 52 Wall St., New York City. (57). **I**

Burling, L. C., 411 Clayton St., Waukegan, Ill. (58).

Burlingame, L. Lancelot, Univ. of Chicago, Chicago, Ill. (58). **G**

Burnett, Charles Theodore, Ph. D., Instructor in Psychology, Bowdoin College, Brunswick, Me. (54). **F K**

Burnett, Fredk., 269 Front St. E., Toronto, Canada. (56). **D I**

*Burnette, F. H., Professor of Horticulture, Louisiana State University, Baton Rouge, La. (54). 1906. **F G**

Burnham, A. C., Presbyterian Hospital, 70th St. and Madison Ave., New York, N. Y. (57).

Burnham, George, Jr., C. E., of Burnham, Williams & Co., Baldwin Locomotive Works, 214 N. 34th St. Philadelphia, Pa. (51). **D**

Burnham, Prof. William H., Clark Univ., Worcester, Mass. (58). **L**

Burns, Elmer Ellsworth, B. S., Dept. of Physics and Chemistry, High School, Berwyn, Ill. (58). **B C**

*Burr, Prof. William H., Columbia University, 151 West 74th St., New York, N. Y. (31). 1883.

Burrell, Rámon Haddock, M. D., Creighton, Neb. (51). **K**

*Burrill, Thomas J., Professor of Botany, University of Illinois, Urbana, Ill. (53). 1905. **G**

*Burt, Edward Angus, Ph. D., Professor of Natural History, Middlebury College, Middlebury, Vt. (50). 1901. **G**

Burt, Silas W., 30 Broad St., New York City. (57).

*Burton, Hon. Theodore E., M. C., Cleveland, Ohio, (52). 1905. **I**

*Burton-Opitz, Russell, Instructor in Physiology, Columbia University, New York, N. Y. (52). 1905. **K**

*Busch, Frederick Carl, M. D., 145 Allen St., Buffalo, N. Y. (49). 1906. **F**

Bush, John C. F., M. D., Wahoo, Neb. (51). **K**

*Bushnell, D. I., Jr., care of Bureau of Ethnology, Washington, D. C. (51). 1903. **H**

Bustamanty, Delfin S., Sequi 1016, Adroqué, F. C. S., Argentine Republic, S. A. (57). **G**

*Butler, Amos W., Secretary Board of State Charities, Indianapolis, Ind. (30). 1885. **F H**

Butler, Bert S., U. S. Geol. Survey, Washington, D. C. (57). **E**
Butler, Matthew Joseph, Deputy Minister and Chief Engineer, Dept. Railways and Canals, Ottawa, Ontario, Canada. (51). **D**
Butler, Paul, care of U. S. Cartridge Co., Lowell, Mass. (57) **C**
Butler, Wm. Mill, 321 St. Nicholas Ave., New York City. (57).
Butterfield, Arthur Dexter, Professor of Mathematics and Mechanics, University of Vermont, Burlington, Vt. (50). **A D**
Butterfield, Mrs. Daniel, 616 Fifth Ave., New York City. (57).
Butters, Fred K., 815 So. 7th St., Minneapolis, Minn. (58).
*Buxton, Bertram H., Professor Experimental Medicine, Cornell Medical College, 1 W. 101st St., New York, N. Y. (54). 1907. **F G**
Byrnes, Dr. Chas. Metcalfe, Prof. of Anatomy, University of Va., Charlottesville, Va. (57). **K**
Byrnes, Owen, Mining Engineer, Gould, Mont. (51). **D E**
*Cady, Hamilton Perkins, Assistant Professor of Chemistry, University of Kansas, Lawrence, Kansas. (52). 1906. **B C**
Cady, Walter B., Chemist for Wabash Portland Cement Co., Cement City, Michigan. (56). **C**
*Cady, Walter G., A. M., Ph. D., 151 High St., Middletown, Conn. (49). 1906. **B**
Cady, William Hamlin, Chemist, Continental Color Co., 127 Power St., Providence, R. I. (57). **C**
*Cain, William, Professor of Mathematics, University of North Carolina, Chapel Hill, N. C. (50). 1901. **A D**
*Cajori, Florian, Professor of Mathematics, Colorado College, Colorado Springs, Colo. (50). 1901. **A**
Caldwell, Benjamin Palmer, A. B., Ph. D., Associate Professor of Chemistry, Tulane University, New Orleans, La. (55). **C**
*Caldwell, Prof. Otis W., Dept. of Botany, Univ. of Chicago, Chicago, Ill. (49). 1902. **G**
Calhoun, Fred H. H., Ph. D., Professor of Geology and Mineralogy, Clemson College, S. C. (54). **E**
*Calkins, Gary N., Ph. D., Professor of Protozoology, Columbia University, New York, N. Y. (49). 1901. **F**
Calkins, Marshall, M. D., 14 Maple St., Springfield, Mass. (29).
Call, Henry Lawrens, Box 1260, Boston, Mass. (57).
Calm, Charles E., Ph. D., 41-43 Warren St., New York, N. Y. (56). **C**
*Calvert, Philip P., Ph. D., Instructor in Zoology, Biological Hall, Univ. of Pennsylvania, Philadelphia, Pa. (50). 1903. **F**
*Calvert, Prof. Sidney, M. A., University of Missouri, Columbia, Mo (47). 1903. **C**

*Calvin, Prof. Samuel, Director Iowa Geol. Survey, Iowa City, Iowa. (37). 1889. E F

*Cameron, Frank K., Ph. D., Chemist, Bureau of Soils, U. S. Dept. Agriculture, Washington, D. C. (49). 1901. C

Cameron, John E., Central High School, Kansas City, Mo. (54). G

Cammann, Hermann H., 51 Liberty St., New York, N. Y. (49).

Camp, Frederick A., 32 West 129th St., N. Y. (57). E

*Campbell, Douglas H., Professor of Botany, Stanford University, Cal. (34). 1888. G

*Campbell, Henry Donald, Professor Geology and Biology, Washington and Lee University, Lexington, Va. (52). 1905. E F G

Campbell, Leslie Lyle, Ph. D., 65 Hammond St., Cambridge, Mass. (48).

*Campbell, Marius Robison, U. S. Geological Survey, Washington, D. C. (52). 1905. E

Campbell, Wm. Francis, M. D., 394 Clinton Ave., Brooklyn, N. Y. (57). K

Campbell, Wm. Mullan, Asst. Prof. Physics, New York University, 56 East 69th St., New York City. (57). B

*CAMPBELL, WILLIAM WALLACE, Director of Lick Observatory, Mt. Hamilton, Cal. (50). 1901. A

Canfield, Geo. F., 49 Wall St., N. Y. (57).

*Cannon, George Lyman, Instructor in Geology, East Side High School, Denver, Colo. (39). 1901. E

*Cannon, W. A., Ph. D., Desert Botanical Laboratory, Tucson, Ariz. (52). 1905. G

*Cannon, Walter Bradford, Harvard Medical School, Boston, Mass. (54). 1906. K

Canter, Hall, Ph. D., Professor of Chemistry, Randolph-Macon College, Ashland, Va. (54). C

Capps, Joseph A., 2216 Prairie Ave., Chicago, Ill. (58). K

Cardiff, Ira D., Ph. D., Prof. of Botany, Univ. of Utah, Salt Lake City, Utah. (58). G

*Carhart, Prof. Henry S., Univ. of Michigan, Ann Arbor, Mich. (29). 1881. B

Carhart, Paul Worthington, care of G. & C. Merriam Co., Springfield, Mass. (56). B

*Carleton, M. A., U. S. Dept. Agriculture, Washington, D. C. (42). 1894. G

*Carlson, Anton Julius, Ph. D., Associate in Physiology, Univ. of Chicago, Chicago, Ill. (52). 1906. K

*Carmalt, William Henry, Professor of Surgery, Yale University, New Haven, Conn. (54). 1906. K

Carman, Albert P., Prof. of Physics, Univ. of Illinois, Urbana, Ill. (58). B

Carman, George N., Dir. of and Prof. of Economic Sect., Lewis Institute, Chicago, Ill. (58). I

*Carmichael, Robert Daniel, Prof. Mathematics, Alabama Presbyterian College, Anniston, Ala. (57). 1908. A

Carnegie, Thomas Morrison, 542 Fifth Ave., New York, N. Y. (50). F

Carney, Frank, Prof. of Geology, Denison University, Granville, Ohio. (58). E

Carpenter, Rev. Charles Knapp, Aurora, Ill. (55). F

Carpenter, Chas. W., 504 Grand St., New York, N. Y. (57).

Carpenter, Ford A., U. S. Weather Bureau, San Diego, Cal. (44). B

Carpenter, Frances Ann, M. D., Belleview-Manchester, Madison Ave., and Bloom St., Baltimore, Md. (54). K

*Carpenter, Franklin R., Ph. D., Mining Expert, 508 Equitable Bldg., Denver, Colo. (50). 1906. D E

Carpenter, Frederic Walton, Ph. D., Instructor in Zoology, Univ. of Illinois, 1013 W. California Avenue, Urbana, Ill. (58). F

Carpenter, Leonard, 420 N. Cascade Ave., Colorado Springs, Colo. (57).

*Carpenter, Louis G., Director Agriculture College, Fort Collins, Colo. (32). 1889. A B

Carr, William Kearny, 1413 K St., N.W., Washington, D. C. (52).

*Carr, William Phillips, M. D., 1418 L St. N. W., Washington, D. C. (51). 1906. K

Carrington, Thomas Spees, M. D., Surgeon in charge, Am. Hospital and Training School for Nurses, Constantinople, Turkey. (55). K

Carroll, Anna Laurie, Plattsburgh, Clinton Co., N. Y (57). B

Carruth, John G., Indiana Ave. and Rosehill St., Philadelphia, Pa. (54). D

Carson, Lewis Clinton, 181 W. Alexandria Ave., Detroit, Mich. (54). I

Carson, Shelby Chadwick, M. D., Greensboro, Ala. (51). K

Carstens, J. H., M. D., Detroit, Mich. (58). K

*Carter, James C., 277 Lexington Ave., New York, N. Y. (36). 1906.

Carter, John E., Knox and Coulter Sts., Germantown, Pa. (33). B H

Carter, Robert A., 4 Irving Place, New York City. (58).

Carty, John Joseph, Chief Engineer, N. Y. Telephone Co., 15 Dey St., New York, N. Y. (54). D

*Carus, Paul, Ph. D., Editor Open Court Pub. Co., 1322 Wabash Ave., Chicago, Ill. (40). 1895. H

Cary, Mrs. Elizabeth M. L., 184 Delaware Ave., Buffalo, N. Y. (45). E

Case, Eckstein, Case School of Applied Science, Cleveland, Ohio. (47).

*Case, Ermine Cowles, Dept. of Geology, University of Mich., Ann Arbor, Mich. (50). 1906. **B C E**

Case, Willard E., Auburn, N. Y. (57).

Case, Zophar, M. D., Warrensburg, Mo. (58). **K**

*Casey, Thomas L., Lt. Col. Corps of Engineers, U. S. A., Office of Light House Board, Washington, D. C. (38). 1892. **D F**

Cassel, Amos M., Erie Business College, Erie, Pa. (57). **I**

*Castle, W. E., Asst. Professor Zoology, Harvard Univ., Museum of Comparative Zoölogy, Cambridge, Mass. (52). 1903. **F**

Cathcart, Miss J. R., care Munroe & Co., 7 Rue Scribe, Paris, France. (50).

*Catlin, Charles A., 133 Hope St., Providence, R. I. (33). 1895. **C**

*Cattell, H. W., M. D., 3709 Spruce St., Philadelphia, Pa. (50). 1901. **K**

*CATTELL, PROF. JAMES MCKEEN, Columbia Univ., New York, N. Y. (44). 1896. **B F H I**

Cerna, Dr. David, Mayor, Monclora, Coahuila, Mexico. (51).

Chadbourn, Erlon R., Melrose, Mass. (29).

Chadwick, George Halcott, Prof. Geology and Biology, St. Lawrence Univ., Canton, N. Y. (54). **E F**

*Chaillé, Stanford E., M. D., LL.D., Dean of Medical Department, Tulane University, New Orleans, La. (51). 1903. **K**

*Chamberlain, Charles Joseph, Dept. of Botany, University of Chicago, Chicago, Ill. (50). 1902. **G**

*Chamberlain, Clark Wells, Professor of Physics, Denison University, Granville, Ohio. (53). 1907. **B**

Chamberlain, Edward B., 503 West 121st St., New York, N. Y. (57). **F G**

Chamberlain, Frederic M., Bureau of Fisheries, U. S. Department of Commerce and Labor, Washington, D. C. (51). **F**

Chamberlin, Emerson, Room 611, 5 Nassau St., New York City. (57).

Chamberlin, Rolin Thomas, Univ. of Chicago, Chicago, Ill. (50). **C E**

*Chamberlin, T. C., Head of Dept. of Geology, Univ. of Chicago, Chicago, Ill. (21). 1877. **B E F H**

Chambers, Frank R., 842 Broadway, New York, N. Y. (50).

Chambers, Harry L., M. D., Lecompton, Kansas. (57). **K**

Chambers, Will Grant, M. S., A. M., Professor of Psychology and Education, State Normal School, Greeley, Colo. (52). **H**

*Chambliss, Charles E., State Entomologist, Columbia, S. C. (51). 1906. **F**

Chambliss, Hardee, M. S., Ph. D., Research Chemist, General Chemical Co., Laurel Hill, L. I., N. Y. (55). **C**

Chancellor, Wm. E., 3537 Brightwood Ave., Washington, D. C. (52). **I**

Chandler, Clarence Austin, Mechanical Engineer, East Bridgewater, Mass. (52). **D**

*Chandler, Prof. C. F., School of Mines, Columbia University, New York, N. Y. (19). 1875. C

Chandler, Elwyn Francis, Professor of Mathematics, University of North Dakota, University, N. Dak. (50). A D

Chaney, Prof. Lucian W., Carleton College, Northfield, Minn. (45). F

*Chant, Clarence Augustus, Lecturer in Physics, University of Toronto, Toronto, Can. (54). 1906. A B

*Chanute, O., 61 Cedar St., Chicago, Ill. (17). 1877. D I

Chapman, Robert Hollister, U. S. Geological Survey, Washington, D. C. (52). E

Chappel, H. G., D. D. S., 630 Eldorado Ave., Oakland, California. (55). K

Charles, Fred. L., Professor of Biology, Northern Illinois State Normal School, De Kalb, Ill. (52). F G

Charles, Rollin L., Instr. in Physics, Lehigh University, So. Bethlehem, Pa. (58). A B

Charles, Miss Vera K., Dept. of Agriculture, Washington, D. C. (57). G

Charlton, Orlando Clarke, Bryan, Texas. (51). E F G

Chase, Mrs. Agnes, U. S. Dept. of Agriculture, Washington, D. C. (54). G

*Chase, Frederick L., Yale University Observatory, New Haven, Conn. (43). 1896. A

Chase, George Colby, President and Professor of Psychology, Bates College, Lewiston, Me. (54). K

Chase, Harry Gray, Assistant Professor of Physics, Tufts College, Tufts College, Mass. (52). B

Chase, Ira Carleton, M. D., 1100 W. 5th St., Fort Worth, Texas. (52). K

Chase, March F., Supt. Mineral Point Zinc Co. at Depue, Depue, Ill. (56). C

Chatfield-Taylor, H. C., 100 Washington St., Chicago, Ill. (58).

Chauncey, Elihu, 11 West 38th St., N. Y. (57).

*Chauvenet, Wm. M., Mining Engineer, 620 Chestnut St., St. Louis, Mo. (50). 1901. C D

*Cheesman, T. M., M. D., Garrison-on-Hudson, N. Y. (50). 1901. K

Cheever, Clarence A., M. D., 1531 Blue Hill Ave., Boston, Mass. (53). G

Cheney, Newel, Falconer, R. F. D. 71, N. Y. (52).

Chesnut, Victor King, 1447 Meridian Place, Washington, D. C. (54). C G

*Chester, Colby M., Rear Admiral, U. S. N., 1736 K St. N. W., Washington, D. C. (28). 1897. E

Chester, Wayland Morgan, Professor of Biology, Colgate University, Hamilton, N. Y. (50). F

Chester, Webster, Convent Hall, Cambridge, Mass. (57). **F G**
Chilcott, Ellery Channing, 3445 Mt. Pleasant St., Washington, D. C. (50). **E**
*Child, Charles Manning, Instructor in Zoology, Hull Zoological Laboratory, University of Chicago, Chicago, Ill. (50). 1901. **F**
Childs, John Lewis, Floral Park, N. Y. (57).
Chisholm, Hugh J., 813 Fifth Avenue, New York, N. Y. (50).
Chisolm, George E., Morristown, N. J. (50).
*Chittenden, Frank Hurlburt, Ph. D., U. S. Dept. Agriculture, Washington, D. C. (48). 1901. **F**
*Chittenden, J. Brace, Ph. D., Brooklyn Polytechnic Institute, Brooklyn, N. Y. (53). 1906. **A**
*Chittenden, Prof. Russell H., Director of Sheffield Scientific School, Yale University, New Haven, Conn. (50). 1901. **C F**
Chivers, Arthur Houston, M. A., Dartmouth College, Hanover, N. H. (57). **G**
Christian, Wilmer, M. D., Indianapolis, Ind. (58).
Christie, E. W., Sewaren, N. J. (58).
*Christie, James, Chief Mech. Engineer Am. Bridge Co., 100 Rochelle Ave., Wissahickon, Philadelphia, Pa. (33). 1894. **D**
Chrysler, Mintin Asbury, Asst. Prof. of Botany, Univ. of Maine, Orono, Me. (57). **G**
Church, Arthur L., 500 N. Broad St., Philadelphia, Pa. (54).
Church, Col. Benj. S., 34 Gramercy Park, New York, N.Y. (57).
*Churchill, William, care Corning Glass Works, Corning, N. Y. (52). 1905. **H**
*Churchill, William W., Vice-President Westinghouse, Church, Kerr & Co., Monroe, Wis. (51). 1908. **D**
Churchward, Alexander, General Electric Co., Schenectady, N. Y. (52). **D**
*Chute, Horatio N., Instructor in Physical Sciences, Ann Arbor High School, Ann Arbor, Mich. (34). 1889. **A B C**
*Clapp, Miss Cornelia M., Mt. Holyoke College, South Hadley, Mass. (31). 1883. **F**
*Clapp, Frederick Gardner, U. S. Geological Survey, Washington, D. C. (51). 1906. **E**
Clark, Alfred N., P. O. Box 168, Wallaceburg, Ontario, Canada. (56). **C**
Clark, Arthur W., care Johnson & Johnson. New Brunswick, N. J. (54). **C**
*Clark, Austin Hobart, 308 Cordova, Washington, D. C. (52). 1906. **F**
Clark, Miss Bertha May, 123 So. 36th St., Philadelphia, Pa. (52). **B**

Clark, Clarence Munroe, Bullitt Building, Philadelphia, Pa. (54). I
Clark, Edmund, 18 Madison St., West Medford, Mass. (50).
Clark, Frederick W., 5121 Kimbark Ave., Chicago, Ill. (58).
Clark, Friend Ebenezer, Ph. D., Dept. of Chemistry, Central Univ., Danville, Ky. (51). C
*Clark, Gaylord Parsons, Professor of Physiology, Syracuse University, Syracuse, N. Y. (50). 1901. F K
*Clark, H. Walton, Bureau of Fisheries, Dept. Commerce and Labor, Washington, D. C. (52). 1906. F
*Clark, Hubert Lyman, Ph. D., Museum of Comparative Zoology, Cambridge, Mass. (50). 1903. F
*Clark, Prof. John E., 34 S. Park Terrace, Long Meadow, Mass. (17). 1875. A
Clark, John Jesse, Manager Text-Book Dept., International Text-Book Co., Scranton, Pa. (50). B D
*Clark, Judson F., Ph. D., 1164 Pacific St., Vancouver, B. C. (52). 1905. G
Clark, Myron Henry, Chemist, Fells, Mass. (58). C
Clark, Thomas H., 34 Lancaster St., Worcester, Mass (40).
Clark, Vinton Albert, Agriculturist and Horticulturist, Urbana Ill. (55). G
Clark, Walter G., 135 Broadway, New York City. (57). B
Clark, Wm. Brewster, M. D., 50 E. 31st St., New York, N. Y. (33). C F
*Clark, Wm. Bullock, Ph. D., Johns Hopkins University, Baltimore, Md. (37). 1891. E
Clarke, Miss Cora H., 91 Mt. Vernon St., Boston, Mass (47). F G
Clarke, Prof. F. W., U. S. Geol. Survey, Washington, D. C. (18). 1874. C
Clarke, J. Fred, M. D., Fairfield, Iowa. (50). F I K
*Clarke, John Mason, Ph. D., N. Y. State Geologist and Director of State Museum, State Hall, Albany, N. Y. (45). 1897. E
*Clarke, Prof. Samuel Fessenden, Williams College, Williamstown, Mass. (50). 1901. F
Clarke, Warren Thompson, Prof. of Entomology, Berkeley, Cal. (57). F
Clarkson, Banyer, 26 West 50th St., N. Y. (57).
Clawson, Arthur Brooks, Instr. in Biology, Lake Forest College, Lake Forest, Ill. (58). F
Claxton, P. P., Dept. of Education, Univ. of Tennessee, Knoxville, Tenn. (52). I
Clayberg, George M., McKinley High School, Chicago, Ill. (58).
*Claypole, Edith J., Ph. D., 50 South Grand Ave., Pasadena, Cal. (46). 1899. F

Cleaver, Albert N., 606 Delaware Ave., South Bethlehem, Pa (50). **D**

*Cleaves, Margaret Abigail, 616 Madison Ave., New York City. (57). 1908. **K**

Cleland, Herdman F., Asst. Prof. Geology and Botany, Williams College, Williamstown, Mass. (57). **E G**

*Clements, Frederic Edward, Ph.D., Associate Professor of Botany, Univ. of Minnesota, Minneapolis, Minn. (52). 1905. **G**

Clements, George E., M. D., Crawfordsville, Ind. (52). **K**

Clements, Joseph, M. D., 1537 S. Main St., Wichita, Kans. (52). **C K**

*Clements, J. Morgan, Economic Geologist and Mining Engineer, 15 William St., New York, N. Y. (51). 1903. **E**

Clerc, Frank L., Shirley Hotel, Denver, Colo. (50). **C D**

Clevenger, J. F., Prof. Natural Science, Wheaton College, Wheaton, Ill. (57).

*Clifford, Harry Ellsworth, Mass. Inst. Technology, Boston, Mass. (54). 1906.

*Clifton, Richard S., U. S. Dept. Agriculture, Washington, D. C. (49). 1906. **F I**

Clinch, Edward S., 133 West 121st St., New York City. (57).

Cline, Isaac M., M. D., U. S. Weather Bureau, New Orleans, La. (50). **F K**

*Clinton, George P., Sc. D., Botanist, Conn. Agrl. Ex. Sta., New Haven, Conn. (54). 1906. **G**

Clough, Albert L., S. B., 303 Kennard Bldg., Manchester, N. H. (45). **B**

Clough, Homer W., U. S. Weather Bureau, Washington, D. C. (54). **A B**

Clute, Willard Nelson, Teacher of Botany, Joliet Township High School, Joliet, Illinois. (57). **G**

*Coates, Charles E., Ph.D., Louisiana State Univ., Baton Rouge, La. (46). 1906. **C**

Cobane, Mary Elizabeth, Teacher in Skaneateles High School, Skaneateles, N. Y. (55). **E**

*Cobb, Prof. Collier, University of North Carolina, Chapel Hill, N. C. (49). 1905. **E**

*Cobb, Herbert Edgar, Prof. of Mathematics, Lewis Institute, Chicago, Ill. (58). 1908. **A D**

Cobb, N. A., Dir. Div. Pathology and Physiology, Exp. Station, H. S. P. A., Honolulu, H. T. (55). **G**

Cobleigh, William Merriam, Professor Physics, Montana Agric. College, Bozeman, Mont. (56). **B**

Coca, Arthur F., M D., Wayne, Pa. (54). **K**

*Cochran, C. B., 514 South High St., West Chester, Pa. (43) 1896. **C**

*Cockerell, Theodore D. A., Department Zoology and Botany, University of Colorado, Boulder, Colo. (50). 1901. **F G**

*Coe, George Albert, Professor of Philosophy, Northwestern University, Evanston, Illinois. (54). 1906. **I**

COE. HENRY W., M. D., "The Marquam," Portland, Oregon. (32). **F H**

Coe, Thomas Upham, M. D., Bangor, Maine. (51). **K**

Coe, True D , Keithsburg, Ill. (58).

Coffeen, Hon. H. A., Sheridan, Wyoming. (51).

Coffin, C. A., 145 W. 58th St., New York, N. Y. (50).

Coffin, Fletcher B., Newton, Mass. (53). **C**

*Coffin, Rev. Selden J., Ph. D., Prof. of Astronomy, Lafayette College, Easton, Pa. (22). 1874. **A I**

*Coghill, George Ellett, Ph. D., Professor of Zoology, Denison Univ Granville, Ohio. (52). 1903. **F G**

*Cogswell, Wm. B., Syracuse, N. Y. (33). 1891. **D**

Cohen, Mendes, Civil Engineer, 825 N. Charles St., Baltimore, Md. (50). **D**

*Cohen, S. Solis, M. D., 1525 Walnut St., Philadelphia, Pa. (50). 1903. **F K**

Cohen, Wm. N., 22 William St., New York, N. Y. (57).

Coil, Nathan Watson, Asst. in Botany, Cornell University, 804 Seneca St., Ithaca, N. Y. (57). **G**

Coit, John Eliot, University of Arizona, Tucson, Ariz. (55). **G**

*Coit, Judson B., Professor of Mathematics and Astronomy, Boston University, Boston, Mass. (54). 1906. **A**

*Coit, J. Milner, Ph. D., Vice-Rector Saint Paul's School, Concord, N. H. (33). 1903. **B C E**

Coker, Dr. Rob't E., care of Director de Fomento, Lima, Peru. (57). **G**

*Coker, Wm. Chambers, Ph. D., Associate Professor of Botany, Univ. of North Carolina, Chapel Hill, N. C. (52). 1905. **G**

*COLBURN, RICHARD T., Room 6, 120 Broadway, New York, N. Y. (31). 1894. **F H I**

Cole, Aaron Hodgman, 6022 Monroe Ave., Hyde Park, Chicago, Ill. (54). **F G**

*Cole, Prof. Alfred D., Vassar College, Poughkeepsie, N. Y. (39). 1891. **B C**

Cole, George Watson, Riverside, Conn. (52). **I**

Cole, Glenn Gates, Prof. of Science, care of Virginia Christian College, Lynchburg, Va. (58). **C**

Cole, Harry Newton, Instr. in Chemistry, Univ. of Michigan, 702 Forest Ave., Ann Arbor, Mich. (58). **C**

Cole, Leon Jacob, Ph. D., Dept. of Zoology, Yale Univ., New Haven, Conn. (52). **F**

Cole, Percival Richard, Ph. D., Teachers College, Columbia University, New York, N. Y. (58). L

Coleman, Clyde B., 512 S. Matthews St., Urbana, Ill. (54).

Coleman, Warren, M. D., 58 West 55th St., New York, N. Y. (57). K

Coley, William Bradley, M. D., 5 Park Ave., New York, N. Y. (57). K

Colie, Edw. M., East Orange, N. J. (30) E I

*Collier, Arthur James, U. S. Geological Survey, Washington, D. C (52). 1905. E

Collier, Price, Tuxedo Park, N Y. (50).

Collier, Robt. J., 416 West 13th St., New York, N. Y. (57).

*Collin, Prof. Alonzo, Emeritus Prof. of Physics, Cornell College, Mount Vernon, Iowa. (21). 1891. B C

Collin, Rev. Henry P., 98 E. Chicago St., Coldwater, Mich. (37). H

*Collingwood, Francis, Elizabeth, N. J (36). 1888. D

Collins, D. B., Madison, Wis. (58).

Collins, Guy N., U. S. Department of Agriculture, Washington, D. C. (51). G

Collins, J. Franklin, Asst. Prof. of Botany, Brown Univ., 468 Hope Street, Providence, R. I. (58). G

Collins, T. Shields, M. D. P. O Box 192, Globe, Ariz. (51). K

Colton, Geo. Henry, Professor of Natural Science, Hiram College, Hiram, Ohio. (51). B E

Colton, H. S, 3409 Powellton Ave., Philadelphia, Pa. (54). F

Colvin, Stephen Sheldon, Associate Professor of Psychology, University of Illinois, Urbana, Ill. (56). H

*Colvin, Verplank, President N. Y. Canadian Pacific Ry., 175 Western Ave., Albany, N. Y. (28). 1880. E

*Comey, Arthur M., Ph. D., 424 East 13th St., Chester, Pa. (57). 1908. C

*Compton, Edith L., Instructor in Dept. Biol., Washington High Schools, 1121 Euclid St. N. W., Washington, D. C. (54). G

*Comstock, C. B., Brig.-Genl., U. S. A., 124 East 27th St., New York, N. Y. (54). 1906.

*Comstock, Charles Worthington, Civil and Mining Engineer, Boston Bldg., Denver, Colo. (47). 1901. A D

*Comstock, Clarence E., Prof. of Mathematics, Bradley Polytechnic Inst., Peoria, Ill. (58). 1908. A

Comstock, Elting H., Instr. in Mathematics, School of Mines, Univ. of Minn., Minneapolis, Minn. (58). A

*Comstock, Prof. Geo. C., Washburn Observatory, University of Wisconsin, Madison, Wis. (34). 1887. A

*Comstock, John Henry, Professor of Entomology, Cornell University, Ithaca, N Y. (54). 1906. F

*COMSTOCK, PROF. THEO. B., Mining and Metallurgical Engineer, 534 Stimson Bldg., Los Angeles, Cal. (24). 1877. B D E

Comstock, Dr. T. Griswold, 3401 Washington Ave., St. Louis, Mo (29). F H

*Conant, Charles A., Treasurer, Morton Trust Co., 38 Nassau St., New York, N. Y. (52). 1903. I

Conant, Miss Emily Ida, St. Margaret Hotel, 129 W. 47th St., New York, N. Y. (33). F H I

*Conant, Prof. Levi L., Polytechnic Institute, Worcester, Mass. (39). 1892. A

Conant, Osmyn P., 70 Fifth Ave., New York, N. Y. (57).

Conarroe, Thomas H., M. D., 1807 Wallace St., Philadelphia, Pa. (50). F K

Condon, T. G., 128 Broadway, New York, N. Y. (57).

Condra, G. E., Ph. D., Asst. Prof., University of Nebraska, Lincoln, Neb. (54) E

Congdon, Chester A., 1509 East Superior St., Duluth, Minn. (58).

Congdon, Edgar Davidson, 65 Oxford St., Cambridge, Mass. (57). F

*Conklin, Edwin Grant, Professor of Biology, University of Pennsylvania, Philadelphia, Pa. (50). 1901. F

Connaway, John W., Professor of Veterinary Science, Missouri State University, Columbia, Mo. (52). F

Connell, J. Harvey, 110 Front St., New York, N. Y. (57).

Connell, John T., Gulfport, Miss. (55). G

Conner, Lewis Atterbury, M. D., 53 East 49th St., New York, N. Y. (57). K

Conner, Phineas Sanborn, M. D., 215 W. 9th St., Cincinnati, O. (54). K

Connor, Leartus, M. D., President of Michigan State Medical Society, 103 Cass St., Detroit, Mich. (51). K

Conradi, A. F., Clemson College, S. C. (55). F

*Conradson, Pontus H., Chief Chemist, Galena-Signal Oil Co., Franklin, Pa. (51). 1906. B C D

Considine, Michael J., 216 West 83d St., New York, N. Y. (57).

Converse, Henry Augustus, care of Davis & Elkins Coll., Elkins, W. Va. (54). 1906. A

*CONVERSE, JOHN H., 500 N. Broad St., Philadelphia, Pa. (54). 1906. D

Converse, Vernon G., care of Ontario Power Co., Niagara Falls, Canada. (50). D

Converse, William A., care Dearborn Drug and Chemical Works, 226 to 234 Postal Telegraph Bldg., Chicago, Ill. (55). C

Conway, Eustace, 15 William St., New York, N. Y. (57).

Cook, Dr. Charles D., 136 Clinton St., Brooklyn, N. Y. (25).

Cooke, George Willis, 49 Park Ave., Wakefield Park, Wakefield, Mass. (47). H I

Cooke, Harte, Mechanical Engineer, care of McIntosh, Seymour & Co., Auburn, N. Y. (53). **D**

*Cook, James B., Ph. D., Randolph Building, Memphis, Tenn. (50).

*Cook, Melville T., Newark, Delaware. (45). 1902. **G**

*Cook, Orator F., U. S. Dept. of Agriculture, Washington, D. C. (40). 1892. **G**

*Cook, Samuel R., 283 Reed St., San Jose, Cal. (50). 1903. **B C**

*Cooley, Prof. LeRoy C., Vassar College, Poughkeepsie, N. Y. (19). 1880. **B C**

*Cooley, Mortimer E., Professor of Mechanical Engineering, University of Michigan, Ann Arbor, Mich. (33). 1885. **D**

*Cooley, Robert A., Zoologist and Entomologist, Montana Agric. College and Experiment Station, Bozeman, Montana. (50) 1903. **F**

Coolidge, Dr. F. S., Pittsfield, Mass. (58).

*Cooper, Hermon Charles, Ph. D., Syracuse Univ., Syracuse, N. Y. (51). 1906. **C**

Cooper, James Campbell, Room 5, Veale Block, Topeka, Kansas. (50). **C E**

Cooper, William S., Botanist, 1015 Jefferson Ave., Detroit, Mich. (58). **G**

Cope, Henry F., 153 La Salle St., Chicago, Ill. (58).

*Copeland, Edwin Bingham, Bureau of Government Laboratories, Manila, P. I. (45). 1901. **G**

Copeland, William Franklin, Prof. of Elementary Science in the State Normal College of Ohio State University, Athens, Ohio. (58). **G**

*Coplin, W. M. L., M. D., Director of Laboratories, Jefferson Medical College Hospital, Philadelphia, Pa. (51). 1903. **K**

*Coquillett, Daniel William, U. S. National Museum, Washington, D. C. (43). 1902. **F**

*Corbett, Prof. L. C., U. S. Dept. Agriculture, Washington, D. C. (48). 1901. **G**

Cornelison, Robert W., Sc.D., Manufacturing Chemist, Bloomfield, N. J. (51). **C**

Cornish, George A., Science Master, Collegiate Institute, Department of Zoology, Lindsay, Ont., Canada. (52). **F**

*Corthell, Elmer L., 1 Nassau St., New York, N. Y. (34). 1886. **D E I**

Cornwell, Herbert C. de V., M. D., 173 Madison Ave., New York, N. Y. (57). **K**

Corwin, Clifford Egbert, Teacher of Science, Marietta High School, Marietta, Ohio. (50). **C**

Cottman, Nicholas Romanoff, 32 Nassau St., New York, N. Y. (57).

Cotton, Edwin C., B. Sc., Ass't Entomologist, Agr. Exp. Station, Knoxville, Tenn. (55). **F**

Coulter, John Gaylord, Prof. of Botany, Normal School, Normal, Ill. (58). **G**

*Coulter, Prof. John M., University of Chicago, Chicago, Ill. (32). 1884. **G**

*Coulter, Samuel Monds, Ph. D., The Shaw School of Botany, St. Louis, Mo. (52). 1905. **G**

*Councilman, Wm. Thomas, Prof. of Pathology, Harvard Medical School, Boston, Mass. (54). 1906. **K**

Coutant, Richard Bonnet, M. D., Tarrytown, N. Y. (51). **K**

Covert, Rev. William Ross, McMechen, West Virginia. (53).

*Coville, Frederick V., U. S. Dept. Agriculture, Washington, D. C. (35). 1890. **G**

Cowart, Fletcher Jackson, Prof. Natural Science, State Normal College, Troy, Ala. (53). **F**

*Cowles, Alfred H., 2612 Prospect St., Cleveland, Ohio. (37). 1897. **B C**

*Cowles, Edward, M. D., Hanover, N. H. (51). 1903. **K**

*Cowles, Henry C., Instructor in Botany, Univ. of Chicago, Chicago, Ill. (54). 1908. **G**

*Cowles, Miss Louise F., 29 Spring St., Springfield, Mass. (47). 1905. **E**

*Cox, Charles F., Grand Central Station, New York, N. Y. (43). 1900. **F G**

Cox, Edgar, Kokomo, Ind. (58).

Cox, Edmund Otis, C. E., Room 2002, 154 Nassau St., New York, N. Y. (51). **D**

Cox, Henry C., Farragut School, Chicago, Ill. (58).

*Cox, John, Professor of Experimental Physics, McGill Univ., Montreal, Canada. (51). 1908. **B**

Cox, John L., 1219 Locust St., Philadelphia, Pa. (54).

*Cox, Ulysses O., 433 Washington Ave., Terre Haute, Ind. (50). 1906. **F**

Coxe, Eckley B., Jr., U. S. Weather Bureau Observ., Drifton, Pa. (51).

Coykendall, Frederick, Gen'l. Mgr. Cornell Steamboat Co., 1 W. 72d St., New York. (57).

Coyle, Rev. John S., S. J., St. Joseph's College, 17th and Stiles Sts., Philadelphia, Pa. (48). **B**

*Crafts, James Mason, Mass. Inst. Technology, Boston, Mass. (47). 1898. **C**

*Cragin, Francis Whittemore, Ph. D., 1715 Wood Ave., Colorado Springs, Colo. (29). 1890. **E F H**

Cragwall, Jasper A., Prof. of Mathematics, Wabash College, Crawfordsville, Ind. (57). **A**

Craig, Alexander Righter, M. D., 114 S. 18th St., Philadelphia, Pa. (51). K

Craig, John, College of Agriculture, Cornell University, Ithaca, N. Y. (41). G

Craig, Thomas, F. R. M. S., 597 Sherbrooke St., West, Montreal, Canada. (57).

Craig, Wallace, 470 East 55th St., Chicago, Ill. (50). F H

*Craighead, Edwin B., President Tulane University, New Orleans, La. (54). 1906. G

*CRAM, ROYS JONES, 26 Hancock Ave. West, Detroit, Mich. (51). 1906. F

Cramer, Gustave, Pres. G. Cramer Dry Plate Co., St. Louis, Mo. (53). B C

Cramp, W. M., 1227 N. Broad St., Philadelphia, Pa. (54). D

*Crampton, Chas. A., M. D., Office of Internal Revenue Commissioner, U. S. Treasury Dept., Washington, D.C (36). 1887. C F K

*Crampton, C. Ward, M. D., 500 Park Ave., New York, N. Y. (53) 1907. K

*Crampton, Henry E., Adjunct Professor of Zoölogy, Barnard College, Columbia University, New York, N. Y. (51). 1903. F

*Crandall, Prof. Charles S., 1106 W. Oregon St, Urbana, Ill. (40). 1894.

Crandall, Francis Asbury, Librarian of Public Documents, 1636 16th St. N. W., Washington, D. C. (50). I

Crandall, Roderic, Instructor in Geology, Stanford University, Palo Alto, Cal. (57). E

Cranston, Robert E., Mining Engineer, Physicians Building, Sacramento, Cal. (50). D E

Cratty, R. I., Armstrong, Iowa. (52). G

Crawford, J. C., Bureau of Entomology, U. S. Dept. Agriculture, Washington, D. C. (54). F

Crawford, J. Forsyth, Tabor, Iowa. (58). K

*Crawford, Prof. Morris B., Middletown, Conn. (30). 1889. B

Crawford, Ralph Dixon, M. A., Asst. in Geology, Univ. of Colorado, Boulder, Colo. (58). E

*Crawley, Edwin S., Ph. D., University of Pennsylvania, Philadelphia, Pa. (45). 1900. A

Crawley, Howard, Medical School, Univ. of Pennsylvania, Philadelphia, Pa. (51). F

Crawley, Joseph Sanford, S. E. Cor. 9th and Jefferson Sts., Philadelphia, Pa. (54).

*Crehore, Albert Cushing, 48 Lincoln Terrace, Yonkers, N. Y. (50). 1908. D E

*Creighton, J. E., Prof. Cornell Univ., Ithaca, N. Y. (54). 1906.

*Crew, Henry, Professor of Physics in Northwestern University, Evanston, Ill. (52). 1903. B

*Crile, George W., M. D., 1834 East 63d St., Cleveland, Ohio. (51). 1903. K

Crockard, Frank Hearne, E. M., C. E., Woodward Building, Birmingham, Ala. (50). D

Crocker, Edward Edgon, Crafton, Pa. (58). D

*Crocker, Francis B., Professor of Electrical Engineering, Columbia University, New York, N. Y. (50). 1901. B D

Crocker, William, University of Chicago, Chicago, Ill. (58). G

*Crockett, Prof. Charles W., Rensselaer Polytechnic Institute, Troy, N. Y. (39). 1894. A D

Crohn, Burrill Bernard, A. B., 437 W. 59th St., New York, N. Y. (57). K

*Crook, Alja Robinson, Ph. D., State Museum Natural History, Springfield, Ill. (47). 1902. E

Crosby, Cyrus R., Cornell Univ., Ithaca, N. Y. (57).

Crosby, Maunsell S., Rhinebeck, N. Y. (57).

Crosby, Oscar Terry, 1414 Broadway, New York, N. Y. (52) C E I

Crosby, Wm. Edward, 1603 Amsterdam Ave., New York, N.Y. (52).

*Crosby, Prof. W. O., Mass. Institute Technology, Boston, Mass. (47). 1900. E

*Cross, Prof. Charles R., Mass. Inst. Technology, Boston, Mass. (29). 1880. B

Cross, Geo. D., 60 Warren St., New York, N. Y. (57).

*Cross, Whitman, U. S. Geological Survey, Washington, D. C. (54). 1906. E

Crowe, Albert B., Charleston, Ill. (58).

CROWELL, A. F., Woods Holl, Mass. (30). C

*Crowell, John Franklin, care of The Wall Street Journal, 44 Broad St., New York, N. Y. (50). 1901. I

Crowley, Chas. F., John A. Creighton Medical College, Omaha, Neb. (53). C

*Croxton, Fred. C., 1429 New York Ave., N.W., Washington, D. C. (54). 1906. I

*Crozier, William, Brigadier-General, U. S. A., and Chief of Ordnance, War Department, Washington, D. C. (50). 1903. D

Crump, Col. M. H., McElroy Bldg., Bowling Green, Ky. (29). E

*Culin, Stewart, Brooklyn Institute of Arts and Sciences, Brooklyn, N. Y. (33). 1890. H

Cullen, Thomas S., M. D., 3 West Preston St., Baltimore, Md. (54). K

*Culver, Garry Eugene, 1103 Main St., Stevens Point, Wis. (54). 1906. C E

Culver, Helen, Lake Forest, Ill. (58).

*Cumings, Edgar R., Associate Professor of Geology, Indiana University, Bloomington, Ind. (48). 1901. E

Cummings, Carlos E., M. D., Secy. Buffalo Soc. Natural History, Buffalo, N. Y. (57). F

Cummins, George Wyckoff, M. D., Belvidere, N. J. (50). F G K

*Cunningham, Susan J., 3308 Arch St., Philadelphia, Pa. (38). 1901. A

Cuntz, Johannes H., 325 Hudson St., Hoboken, N. J. (36).

Currie, C. A., M. D., P. O. Box 1606, Philadelphia, Pa. (48). F

CURIE, CHAS., 22 William St., New York, N. Y. (57).

*Curtis, Carlton C., Columbia University, New York, N. Y. (51). 1903. G

Curtis, Edward, M. D., 33 West 69th St., New York, N. Y. (57). K

Curtis, G. Lenox, M. D., 17 East 45th St., New York, N. Y. (51). K

Curtis, George W., Mgr. Burrus Mill and Elevator Co., Fort Worth, Texas. (50).

*Curtis, H. Holbrook, M. D., 118 Madison Ave., New York, N. Y. (51). 1908. K

Curtis, Lester, 35 Douglas Place, Chicago, Ill. (58).

*Curtis, Mattoon M., Prof. of Philosophy, Western Reserve University, Cleveland, Ohio. (50). 1906. H I

Curtis, Warren, 30 Broad St , New York, N. Y. (57).

*Curtis, William E., Post Building, Washington, D. C. (40). 1903. H I

*Curtis, Winterton C., Ph. D., Asst. Prof. of Zoölogy, University of Missouri, Columbia, Mo. (53). 1905. F

Curtiss, Charles F., Dean and Director, Iowa State College, Ames, Ia. (54). G

*Curtiss, Richard Sydney, Chemical Laboratory, Univ. of Illinois, Urbana, Ill. (52). 1903. C

Curtiss, Rozel M., M. D., Marengo, McHenry Co., Ill. (58).

*Cushing, Harvey, M. D., 107 East Chase St., Baltimore, Md. (52). 1906. K

*Cushing, Henry Platt, Adelbert College, Cleveland, Ohio. (33). 1888. E

*Cushman, Allerton, Ph. D., Bureau of Chemistry, U. S. Dept. Agriculture, Washington, D. C. (50). 1901. C

*Cutler, Elbridge Gerry, M. D., 214 Beacon St., Boston, Mass. (54). 1906. K

Cutter, Irving S., 134 N. 11th St., Lincoln, Neb. (50). F G

*Dabney, Charles W., Ph. D., President, University of Cincinnati, Cincinnati, Ohio. (47). 1901. C

Dachnowski, Alfred, Ph.D., Botanical Dept. Ohio State University, Columbus, Ohio. (57). G

*da Costa Sena, Dr. Jaoquim Candido, Director of School of Mines, Ouro Preto, Ouro Preto, Brazil. (54). 1906. E

Daggette, Alvin S., M. D., 400 South Craig St., Pittsburg, Pa. (50). F K

*Dahlgren, Ulric, Ph. D., Princeton University, Princeton, N. J. (51). 1905. F

Dahm, Thomas M., 1421 Oak Ave., Evanston, Ill. (58). D B

*Dains, Frank Burnett, Ph. D., Professor of Chemistry, Washburn College, Topeka, Kan. (56). 1908. C

Dakin, Channing E., Mason City, Iowa. (58).

Daland, Rev. William Clifton, D. D., President of Milton College, Milton, Wis. (52). I

*Dales Benton, Associate Professor of Chemistry, University of Nebraska, Station A., Lincoln, Neb. (56). 1908. C

*Dall, William Healey, Smithsonian Institution, Washington, D.C. (18). 1874. F H

Dalrymple, W. H., Prof. Vet. Science, La. State Univ. and A. & M. College, Baton Rouge, La. (50). F K

*Dana, Dr. Charles Loomis, 53 West 53d St., New York, N. Y. (46). 1899. H

*Dana, Edward Salisbury, 24 Hillhouse Ave., New Haven, Conn. (23). 1875. B E

Daniel, John, Professor of Physics, Vanderbilt Univ., Nashville, Tenn. (50). B

Daniels, L. E., 1104 Main St., La Porte, Ind. (58).

*Darlington, Thomas, M. D., 48 West 59th St., New York, N. Y (57). 1908. K

*Darton, Nelson H., U. S. Geol. Survey, Washington, D. C. (37). 1893.

Daugherty, Lewis S., Professor of Biology, State Normal School, Kirksville, Mo. (53). F

*d'Auria, Luigi, 435 S. 51st St., Philadelphia, Pa. (51). 1903. A D

*Davenport, Charles Benedict, Ph. D., Director, Station for Experimental Evolution, Cold Spring Harbor, L. I., N. Y. (46). 1898. F

Davenport, Mrs. Elizabeth Braxton, 45 Green St., Brattleboro, Vt. (57).

Davenport, Prof. Eugene, Dean of the College of Agriculture, University of Illinois, Champaign, Ill. (39).

Davenport, Francis Henry, M. D., 419 Boylston St., Boston, Mass. (50). F K

Davidson, R. J., Agric. Exper. Station, Blacksburg, Va. (40). C

Davies, Arthur Ernest, Ph. D., Ohio State University, Columbus, Ohio. (53). I

Davies, Julien T., 34 Nassau St., New York, N. Y. (57).

Davies, William G., LL.D., 32 Nassau St., New York, N. Y (49).

Davis, Abial B., A. M., 129 East Lincoln Ave., Mt. Vernon, N. Y. (44). A

*Davis, Andrew McFarland, 10 Appleton St., Cambridge, Mass. (35). 1906. H

*Davis, Bergen Dept. of Physics, Columbia University, New York, N. Y. (49). 1905. B

*Davis, Bradley Moore, 17 Felton Hall, Cambridge, Mass. (45). 1897. G

*Davis, C. H., Rear Admiral, U. S. N., Navy Dept., Washington, D. C. (40). 1896.

Davis, Charles Gilbert, M. D., 31 Washington St., Chicago, Ill. (51). K

Davis, Donald Walton, Sweet Briar Inst., Sweet Briar, Va. (55). F

Davis, Edward E., 47 W. Main St., Norwich, N. Y. (50).

*Davis, Ellery Williams, Ph. D., Professor of Mathematics, The Univ. of Nebraska, Lincoln, Nebr. (55). 1906. A

Davis, Grace E., Head Instructor in the Department of Physics, Wellesley College, Wellesley, Mass. (57). B

Davis, Herbert Spencer, Univ. of Florida, Gainesville, Fla. (57). F

*Davis, Herman S., Ph. D., Dover, Del. (50). 1901. A

*Davis, J. J., M. D., 1119 College Ave., Racine, Wis. (31). 1899. F G

Davis, Kary Cadmus, Ph. D., Canton, N. Y. (50). G

*Davis, Nathaniel French, Prof. of Pure Mathematics, Brown University, Providence, R. I. (54). 1906. A

Davis, N. S., Jr., 291 Huron St., Chicago, Ill. (50). F G K

*Davis, Wm. Harper, 3107 N. 13th St., Philadelphia, Pa. (50). 1903. H I

*Davis, Prof. W., 17 Francis Ave., Cambridge, Mass. (33). 1885. B E

Davis, Wm. T., 46 Stuyvesant Place, New Brighton, N. Y. (57). K

*Davison, Alvin, Ph.D., Dept. of Biology, Lafayette College, Easton, Pa. (49). 1905. F

Davison, John M., Pittsford, N. Y. (38). C

*Davisson, S. C., Asst. Prof. of Mathematics, Indiana Univ., Bloomington, Ind. (58). 1908. A

*Davy, J. Burtt, State Agrostologist and Botanist, Department of Agriculture, Pretoria, Transvaal. (51). 1903. G

*Dawson, Dr. Percy Millard, Instructor in Physiology, Johns Hopkins University, Baltimore, Md. (50). 1903. F K

Dawson, William Bell, M. A., Sc. D., Tidal Survey, Marine Dept., Ottawa, Canada. (54). D

Day, Edna D., Ph. D., In charge Dept. Home Economics, Univ. of Missouri, 906 Conley Ave., Columbia, Mo. (58).

*Day, William Scofield, Ph. D., 220 Hobart Ave., Summit, N. J. (50). 1901. B

*Dean, Arthur Lyman, Ph. D., 93 Broad St., Boston, Mass. (53). 1906. G

*Dean, Bashford, Dept of Zoology, Columbia University, New York, N. Y. (54). 1906. F

Dean, Seth, C. E., Surveyor of Mills County, Glenwood, Iowa. (34). D

Deans, John Sterling, Chief Engineer, Phoenix Bridge Co., Phoenixville, Pa. (51). D

*Dearborn, George Van Ness, Ph. D., Professor of Physiology, Tufts College Medical and Dental Schools, Boston, Mass. (52). 1906. K

Dearborn, Walter F., 218 West Gilman St., Madison, Wis. (58). H K

Decker, Charles E., 6159 Ellis Ave., Chicago, Ill. (58).

de Coppet, E. J., 314 West 85th St., New York, N. Y. (57).

de Coppet, Henry. 754 Park Ave., New York, N Y. (49)

Deens, Anna M., 216 North Ave., W., Allegheny, Pa. (50). F G

de Forest, Robert W., 30 Broad St., New York, N. Y. (49).

De Garmo, Charles, Prof. of the Science and Art of Education, Cornell University, Ithaca, N. Y. (58). L

de Geofroy, George, 12 Rue du Boquet de Longchamp, Paris, France. (55). C

*Deghuée, Joseph A., Ph. D., 247 Harrison St., Brooklyn, N. Y. (40). 1900. C

*Deimel, Richard F., 146 Berkeley Place, Brooklyn, N. Y. (52). 1906. A

DeKalb, Courtenay, 121 E. Ave. 49, Los Angeles, Cal. (54).

*Delabarre, E. B., Ph. D., 9 Arlington Ave., Providence, R. I. (49). 1901. H I

Delafield, Maturin L., Jr., care Morgan, Harjes & Co., 31 Boulevard Haussmann, Paris, France. (43). G

Delamater, N. B., M. D., 809 Marshall Field Bldg., Chicago, Ill. (58). K

De Landero, Carlos F., Asst. Director, Pachuca and Real del Monte Mining Co:, Pachuca, Mexico. (36). B C

*Delano, Frederic A., Supt. of Motive Power, C. B. and Q. Railroad, 209 Adams St., Chicago, Ill. (50). 1906. D

Delany, Patrick Bernard, E. E., Inventor, Nantucket, Mass. (50). D

de Lisle, Justin, M. D., 500 Fifth Ave., New York, N. Y. (54). K

*Dellenbaugh, Frederick S., Century Club, 7 West 43d St., New York, N. Y. (51). 1905. H

Delm, William Maurice, University Station, Seattle, Wash. (58).

de Milhan, Louis John de Grenon, 119 East 19th St., New York, N. Y. (56). H

Demming, Henry Clay, Consulting Geologist and Mineralogist and Chemist, Commonwealth of Penn., Harrisburg, Pa. (54). C E

Dempster, A., 5721 Stanton Ave., Pittsburg, Pa. (50). D

*Dennett, William S., 8 East 49th St., New York, N. Y. (52). 1906. A K

*Dennis, David Worth, Professor of Biology, Earlham College, Richmond, Ind. (50). 1901. F

*Dennis, Louis Munroe, Cornell University, Ithaca, N. Y. (43). 1895. C

Densmore, Dr. Emmet, Hotel Astor, Brooklyn, N. Y. (54). F K

Depew, Hon. Chauncey M., Room 200, Grand Central Station, New York, N. Y. (51). D

de Raasloff, Harold, Civil Engineer, 18 Burling Slip, New York, N. Y. (51). D

Derby, George McClellan, Lieut -Col. Corps of Engineers, U. S. A., U. S. Engineers Office, 1015 Carrollton Ave., New Orleans, La. (50). D

*Derby, Orville A., Servico, Geologico E. Mineralogico do Brasil, Rio de Janerio, Brazil, South America. (39). 1890. E

Derick, Carrie M., M. A., Asst. Prof. of Botany, McGill University, Montreal, Canada. (57). G

Dery, D. George, Catasauqua, Penna. (55). C G

de Schweinitz, G. E., M. D., 1705 Walnut St., Philadelphia, Pa. (54).

Detmers, Fredericka, 1315 Neil Ave., Columbus, Ohio. (58). G

Devereux, W. B., 15 William St., New York, N. Y. (50).

*Dewey, Lyster H., U. S. Dept. Agriculture, Washington, D. C. (40). 1899. F G

DeWitt, Charles H., Prof. of Histology and Bacteriology, Valparaiso Univ., 355 College Ave., Valparaiso, Ind. (58). K

De Wolf, Frank Walbridge, State Geol. Survey, Urbana, Ill. (57). E

*Dexter, Edwin Grant, Ph.D., San Juan, Porto Rico. (52). 1905. K

DEY, ANTHONY, 69 Liberty St., New York, N. Y. (57).

Dickerson, E. N., 141 Broadway, New York, N. Y. (49).

Dickie, George William, San Mateo, Cal. (54). D

Dickinson, Charles, West Taylor St., and The River, Chicago, Ill. (58).

Diemer, Hugo, Prof. Mechanical Engineering, State College, Pa. (49). D

Dietz, William G., M. D., 21 N. Vine St., Hazleton, Pa. (54). K

Dike, Archie Clarence, Bristol, Vermont. (54).

*Diller, J. S., U. S. Geological Survey, Washington, D. C. (52). 1903. E

*Dimmock, George, Box 1597, Springfield, Mass. (22). 1874. F

Dimock, Geo. E., 907 North Broad St., Elizabeth, N. J. (57).

Dimon, Miss Abigail Camp, 367 Genesee St., Utica, N. Y. (50). F K

Dinkey, Alva C., 1116 Carnegie Bldg., Pittsburg, Pa. (50). D

Disbrow, William S., M. D., 151 Orchard St., Newark, N. J. (51). K

Dixon, Brandt B., President of Newcomb College, New Orleans, La. (52). K

*Dixon, Roland B., Peabody Museum, Cambridge, Mass. (46). 1901. H

*Dixon, Samuel Gibson, M. D., Bacteriologist, The Acad. Nat. Sciences, 1900 Race St., Philadelphia, Pa. (50). 1906. F K

*Dock, George, M. D., Professor of Medicine, University of Michigan, Ann Arbor, Mich. (51). 1903. K

Dodds, Gideon S., Instructor of Zoology, Univ. of Colorado, 1031 13th St., Boulder, Colo. (57). F

Dodds, Robert, M. D., 144 Oakwood Boulevard, Chicago, Ill. (58).

*Dodge, Charles Wright, Univ. of Rochester, Rochester, N. Y. (39). 1898. F

Dodge, D. Stuart, 99 John St., New York, N. Y. (49).

*Dodge, Richard E., Teachers' College, Columbia Univ., New York, N. Y. (49). 1901. E I

*Dodson, John Milton, Prof. of Medicine and Dean of Students, Rush Medical College, 34 Washington St., Chicago, Ill. (54). 1906. K

*Dodson, W. R., A. B., B. S., Director and Botanist of La. Experiment Station, Baton Rouge, La. (54). 1906. G

Doherty, Henry L., 40 Wall St., New York, N. Y. (48). B C D

Dohmen, Dr. F. J., 15 Ellery St., Cambridge, Mass. (57).

*Dolbear, Prof. A. Emerson, Tufts College, Mass. (20). 1880. B

Dole, Rev. Charles Fletcher, 14 Roanoke Ave., Jamaica Plain, Mass. (50). I

*Donaldson, Henry Herbert, Professor of Neurology, Wistar Institute of Anatomy, 36th St. and Woodland Ave., Philadelphia, Pa. (54). 1906. K

Dondlinger, Peter T., Ph.D., Drawer 30, New Haven, Conn. (58). I

*Doolittle, Prof. C. L., Flower Astronomical Observatory, University of Pennsylvania, Upper Darby, Pa. (25). 1885. A

Doran, Edwin W., Ph.D., Belhaven College, Jackson, Miss. (54). F

Dorner, Herman B., Urbana, Ill. (57). G

*Dorsey, George A., Ph. D., Field Museum of Natural History, Chicago, Ill. (39). 1892. H

Dorsey, Herbert Grove, 404 Oak Ave., Ithaca, N. Y. (51). B

*Dorsey, N. Ernest, Ph. D., The California, Washington, D. C. (46). 1898. B

Doty, Paul, care of St. Paul Gas Light Co., St. Paul, Minn. (43). D

Doubt, Thomas Eaton, Ph. D., Dept. of Physics, Armour Inst. of Technology, Chicago, Ill. 1898. (48). B

Doughty, Mrs. Alla, Milford, Pa. (49).

Douglas, Alfred, 170 West 59th St., New York, N. Y. (57).

Douglas, Beaman, 40 E. 41st St., New York, N. Y. (57). K

Douglas, Edward Morehouse, U. S. Geological Survey, Washington, D. C. (54). E

*Douglas, James, 99 John St., New York, N. Y. (49). 1905. E

Douglass, George Lyon, Attorney-at-Law, 184 LaSalle St., Chicago, Ill. (55). I

*Dow, Allan Wade, 24 E. 21st St., New York, N. Y. (52). 1905. C D

*Dow, Dr. Edmund L., 49 W. 57th St., New York, N. Y. (57). 1908. K

Dow, Herbert H., Midland, Mich. (47). C

*Dowd, Jerome, Lecturer on Sociology, Wisconsin University, Madison, Wis. (55). 1906. I

Dowell, Philip, Ph. D., 12 Bond St., Port Richmond, N. Y. (50). G

Downing, Elliot Rowland, Ph. D., Professor of Biology, Northern State Normal School, Marquette, Mich. (51). F

Downs, Edgar Selah, Ph. D., Elec. Engineering Dept., Columbia University, New York, N. Y. (50). B

Downs, Norton, M. D., Fordhooke Farm, Three Tuns, Pa. (52). K

DRAKE, NOAH FIELDS, Prof. of Geology, Peiyang Univ., Tientsin, China. (57). E

*DRAPER, DANIEL, Ph. D., N. Y. Meteorological Observatory, Central Park, 64th St., Fifth Ave., New York, N. Y. (29). 1881. A B D F

*Draper, Mrs. Henry, 271 Madison Ave., New York, N. Y. (49). 1906.

Drayer, Howard C., Yeatman High School, St. Louis, Mo. (51). B

Drescher, Willibald A. E., P. O. Drawer 1033, Rochester, N. Y. (41). F

*Drew, Gilman A., Prof. of Zoölogy, Univ. of Maine, Orono, Me. (54). 1906. F

Drinker, Henry Sturgis, Ph. D., President of Lehigh University, South Bethlehem, Pa. (55). D L

*DROPPERS, GARRETT, President of the State University of South Dakota, Vermillion, S. Dak. (50). 1901. I

Drummond, Isaac Wyman, Ph. D., 436 W. 22d St., New York, N. Y. (36).

*Dryer, Charles Redway, Professor of Geography, Indiana State Normal School, Terre Haute, Ind. (50). 1903. E

Duane, Alexander, M.D., 49 East 30th St., New York, N. Y. (54). **K**

*Duane, William, Ph. D., 241 Boul. St. Germain, Paris, France. (50). 1901. **B**

Dublin, Louis I., 370 Convent Ave., New York, N. Y. (58).

*Du Bois, Prof. Aug. J., New Haven, Conn. (30). 1882. **A B D**

Du Bois, Mrs. George W., 303 Lexington Ave.,New York, N. Y. (57).

*Du Bois, Howard Weidner, 4526 Regent St., Philadelphia, Pa. (47). 1906. **A**

*Du Bois, Patterson, 401 So. 40th St., Philadelphia, Pa. (33). 1887. **C H I**

*Du Bois, Burghardt, Professor of Economics and History, Atlanta University, Atlanta, Ga. (50). 1905. **I**

*Duckwall, Edward Wiley, Bacteriologist and Food Specialist, Aspinwall, Pa. (53). **C**

*Dudley, Charles B., Drawer 156, Altoona, Pa. (23). 1882. **B C D**

*Dudley, Wm. L., Vanderbilt University, Nashville, Tenn. (28). 1881. **C**

*Dudley, Prof. Wm. R., Dept. of Systematic Botany, Stanford University, Cal. (29). 1883. **G**

Duerden, J. E., Ph. D., Prof. of Zoology, Rhodes University College, Grahamstown, So. Africa. (52). **F**

Duerden, Lawrence L., 50 Putnam Ave., Brooklyn, N. Y. (57).

*Dugan, Raymond Smith, Ph. D., Princeton University Observatory, Princeton, N. J. (55). 1907. **A B**

Dugan, William James, M. D., 2224 So. Broad St., Philadelphia, Pa. (57). **K**

*Duggar, Benjamin Minge, Professor of Botany, Univ. of Missouri, Columbia, Mo. (45). 1900. **G**

*Duke, Frank Williamson, Va. Mechanics Institute, Richmond, Va. (50). 1906. **A**

Dulles, Charles W., M. D., 4101 Walnut St., Philadelphia, Pa. (51). **K**

*Dumble, E. T., Consulting Geologist, Southern Pacific Co., 1306 Main St., Houston, Tex. (37). 1891. **E**

Duncan, Frederick N., Oxford, Ga. (50). **C**

*Duncan, George Martin, Professor of Philosophy, Yale University, New Haven, Conn. (50). 1902. **H**

Duncan, Robert Andrew, Chemist, 1737 Makiki St., Honolulu, Hawaii. (58). **C**

*Duncan, Robt. Kennedy, Prof. of Industrial Chemistry, University of Kansas, Lawrence, Kan. (57). 1908. **C**

Duncanson, Henry Bruce, Professor of Biology, Nebraska State Normal School, Peru, Neb. (50). **F**

Dunham, Carroll, M. D., Hillside, Irvington-on-Hudson, N. Y. (57). **K**

*Dunham, Edward K., M. D., Professor of Pathology, Carnegie Laboratory, 338 East 26th St., New York, N. Y. (30). 1890.
Dunham, Mrs. G. H., 19 West 81st St., New York, N. Y. (57).
Dunham, Theodore, M. D., 48 East 63d St., New York, N. Y. (57). K
Dunham, William Russell, M. D., 55 Court St., Keene, N. H. (54). K
Dunipace, Joseph Evans, 107 East Green St., Champaign, Ill. (57). C
Dunlap, William, 661 Cass Ave., Detroit, Mich. (58).
Dunlevy, Prof. Robert Baldwin, Southwestern College, Winfield, Kansas. (50). C E
Dunn, Elizabeth Hopkins, Asso. in Anatomy, 29 Anatomy Bldg., University of Chicago, Chicago, Ill. (58). F
Dunn, Gano Sillick, Vice-President and Chief Engineer, Crocker-Wheeler Company, Ampere, N. J. (50). D
Dunn, Ira J., M. D., 810 Peach St., Erie, Pa. (51). K
*Dunnington, Prof. F. P., University Station, Charlottesville, Va. (26). 1880. C
DUNSCOMBE, GEO. ELLSWORTH, 392 Canal St., New York, N. Y. (57).
Dunyon, N. A., Mining Engineer, 23 H St., Salt Lake City, Utah. (55). D E
Du Pont, Pierre S., Wilmington, Del. (57). C
*Durand, Elias J., D. S., 120 Oak Ave., Ithaca, N. Y. (41). 1899. G
Durand, Mrs. Frederic F., Maplewood, N. J. (58).
Durand, John S., 81 Fulton St., New York, N. Y. (49).
*Durand, W. F., Ph. D., Prof. Mechanical Engineering, Leland Stanford, Jr., Univ., Stanford University, Cal. (37). 1890. B
Durfee, Walter Chaloner, 2nd, A M., 81 Sedgwick St., Jamaica Plain, Mass. (56). B
*Durfee, William P., Ph. D., 639 Main St., Geneva, N. Y. (46). 1899. A
Durkee, Eugene W., 534 Washington St., New York, N. Y. (57).
Durrell, H. C., 17 Dana St., cor. Harvard St., Cambridge, Mass. (57). E
Duryea, Chester Burnett, Cardinal, Ont., Canada. (57). C
*Dutcher, William, 525 Manhattan Ave., New York, N. Y. (54). 1906. F
Dutton, Charles Frederic, Jr., A. B., 1464 West 77th St., Cleveland, Ohio. (47).
*Duval, Edmund P. R., 214 N. Brooks St., Madison, Wis. (50). 1906. A
*Duvall, Trumbull Gillette, Ph. D., Professor of Psychology and Philosophy, Ohio Wesleyan University, Delaware, Ohio. (52). 1906. H

*Duvel, Joseph W. T., D. Sc., Bur. Plant Industry, U. S. Dept. of Agriculture, Washington, D. C. (48). 1905. G

Duvigneard, George, 819 Chamber of Commerce, Minneapolis, Minn. (55). I

*Dwight, Jonathan, Jr., M. D., 134 W. 71st St., New York, N. Y. (49). 1906. F

Dwight, Mrs. Melatiah E., 31 Mt. Morris Park, West, New York, N. Y. (57).

*Dwight, Prof. William B , Dept. of Natural History, Vassar College, Poughkeepsie, N. Y. (30). 1882. E F

*Dyar, Harrison G., A. M., Ph. D., U. S. National Museum, Washington, D. C. (43). 1898.

*Dyche, Lewis Lindsay, Professor of Systematic Zoology and Taxidermist, University of Kansas, Lawrence, Kans. (51). 1906. F

Dysterud, E., Electrical Engineer, Monterey, N. L., Mexico. (50). D

Eagleson, James B., M. D., 512 Burke Building, Seattle, Wash. (51). K

*Earhart, Robert F., Asst. Professor of Physics, Ohio State University, Columbus, Ohio. (53). 1907. B

*Earle, F. S., Henadura, Cuba. (39). 1896. G

Earll, Charles Isaac, M. E., 11 Broadway, New York, N. Y. (55). D

East, Edward Murray, Ph. D., Conn. Agric. Exper. Station, New Haven, Conn. (57). C G

*Eastman, Charles Rochester, Harvard University Museum, Cambridge, Mass. (41). 1896. E F

*Eastman, Prof. J. R., Andover, N. H. (26). 1879. A

Easton, Christopher, A. B., 39 E. Central Ave., St. Paul, Minn. (52). I K

*Eastwood, Miss Alice, 2705 Hearst Ave, Berkeley, Cal. (50). 1901. G

*Eaton, E. Howard, Canandaigua, N. Y. (52). 1906. F

*Eaton, George Francis, 80 Sachem St., New Haven, Conn. (54). 1906. F

Eaton, Harry N., A. B., Chapel Hill, N. C. (56). E

Eaton, Wm. S., 86 Trinity Place, New York, N. Y. (57).

*Ebaugh, W. Clarence, Ph. D., Director Dept. of Chemistry, University of Utah, Salt Lake City, Utah. (54). 1906. C

Eccles, David Charles, 191 Dean St., Brooklyn, N. Y. (50). C

*Eccles, Robert G., M. D., 191 Dean St., Brooklyn, N. Y. (31). 1894. C F

Eckart, Charles F., Director of the Sugar Experiment Station, Box 180, Honolulu, H. T. (53).

Eckhart, Percy B., First Nat'l Bank Bldg., Chicago, Ill. (58).
*Eddy, Prof. H. T., Univ. of Minnesota, Minneapolis, Minn. (24). 1875. A B D
Edgar, Clinton G., 72 Jefferson Ave., Detroit, Mich. (46).
Edgar, Thomas Oscar, St. Luke's Hospital, Chicago, Ill. (53). F K
Edgerton, Claude Wilbur, Assistant in Botany, Cornell University, Forest Home, Ithaca, N. Y. (56). G
Edwards, Arthur M., M. D., F. L. S., F. R. M. S., R. A. S., 423 Fourth Ave., Newark, N. J. (52). K
*Edwards, Prof. Charles Lincoln, Trinity College, Hartford, Conn. (49). 1900. F
*Edwards, Gen. Clarence R., U. S. A., Chief of the Bureau of Insular Affairs, War Department, Washington, D. C. (25). 1906. I
Egbert, J. Hobart, M. D., 237 Valley St., Willimantic, Conn. (55). K
Egdahl, Anfin. State University, Iowa City, Iowa. (58).
Eggleston, Willard Webster, New York Botanical Garden, Bronx Park, New York City. (57).
Ehrenfeld, Charles Hatch, Prof. Chemistry and Physics, Collegiate Institute, York, Pa. (54). C
Ehrenfeld, Frederick, Ph. D., Instructor in Geology, University of Pennsylvania, Philadelphia, Pa. (50). E
*Ehrhorn, Edward Macfarlane, Deputy State Horticultural Commissioner, Room 6, Ferry Bldg, San Francisco, Cal. (50). 1906. F
Eichberg, Joseph, M. D., 22 W. 7th St., Cincinnati, O. (55). K
*Eichelberger, William Snyder, Ph. D., Prof. of Mathematics, U. S. Naval Observatory, Washington, D. C. (41). 1896. A
Eidlitz, Otto M., 489 Fifth Ave., New York City. (57).
Eidlitz, Robert James, 995 Madison Ave., New York City. (57).
*Eiesland, John, Ph. D., Dept. of Mathematics, West Virginia University, Morgantown, W. Va. (50). 1903. A
*Eigenmann, Carl H., Ph. D., Indiana University, Bloomington, Ind. (48). 1899. F
Eikenberry, William Lewis, Instructor in Botany, High School, 4233 Russell Ave., St. Louis, Mo. (53). G
Eilers, Anton F., Mining Engineer and Metallurgist, 751 St. Mark's Ave., Brooklyn, N. Y. (50). D E
*Eimbeck, William, Hotel Montrose, 14th and H Sts. N. W., Washington, D. C. (17). 1874. A B D
Eimer, August, 30 Irving Place, New York, N. Y. (50).
Elder, E. Waite, East Side High School, Denver, Colo. (50). B
Eldred, Frank R., 625 So. Alabama St., Indianapolis, Ind. (57). C
*Elkin, William L., Yale University Observatory, New Haven, Conn. (33). 1885. A

Elkus, Abram I., 50 Pine St., New York, N. Y. (57).
Elliott, Charles Gleason, U. S. Dept. Agriculture, Washington, D. C. (54). D
Elliott, Edward Charles, Asso. Prof. of Education, University of Wisconsin, Madison, Wis. (58). L
Elliot, George T., M. D., 36 East 35th St., New York, N. Y. (50). F K
Ellis, A. Caswell, University of Texas, Austin, Tex. (52). I K
*Ellis, Frederick W., M. D., Monson, Mass. (47). 1906. B H
Ellis, Henry Rives, 148 Pierpont St., Salt Lake City, Utah. (53). C
Ellis, Max Mapes, Kappa Sigma House, Bloomington, Ind. (58). F
Ellsworth, James W., 18 East 53d St., New York, N. Y. (54). I
*Elrod, Morton John, Professor of Biology, University of Montana, Missoula, Mont. (50). 1901. F
*Elsberg, Chas. A., Madison Ave. and 63d St., New York, N. Y. (57). 1908. K
Ely, Charles Russell, Professor of Natural Science, Gallaudet College, 5 Kendall Green, Washington, D. C. (52). C
Ely, Frederick G., 24 Broad St., New York City. (57).
Ely, Sumner Boyer, 5122 Dahlia St., Pittsburg, Pa. (50). D
*Ely, Theo. N., Chief of Motive Power, Pennsylvania R.R., Broad St. Station, Philadelphia, Pa. (29). 1886. D
*Emerson, Prof. Benjamin K., Box 203, Amherst, Mass. (19). 1877. E F
*EMERSON, C. F., Prof., Box 499, Hanover, N. H. (22). 1874. A B
Emery, William O., 2132 Flagler Place N. W., Washington, D. C. (53). C
Emmert, E. J., M. D., Lawrenceburg, Ind. (58). K
Emmett, Arthur Donaldson, Chemical Laboratory, Univ. of Illinois, Urbana, Ill. (57). C
Emmons, Arthur B., Newport, R. I. (50). E
*EMMONS, S. F., U. S. Geol. Survey, Washington, D. C. (26). 1879. E
*Emory, Hon. Frederic, Queenstown, Md. (52). 1907. I
Emrich, William H., Marquette Club, Chicago, Ill. (58).
Enders, Howard Edwin, Ph.D., Dept. of Biology, Purdue University Lafayette, Ind. (50). F G
Enfield, Charles, M. D., Jefferson, Iowa. (58).
Engberg, Carl Cristian, Asso. Prof. of Mathematics, Univ. of Nebraska, Sta. A., Lincoln, Neb. (58). A
Engle, Horace M, 414 Terry Bldg., Roanoke, Va. (52). E
Engle, Dr. Harry P., Newton, Iowa. (58). K
*Engler, Edmund Arthur, President, Worcester Polytechnic Institute, Worcester, Mass. (50). 1901. A I

ENO, A. F., 32 Fifth Avenue, New York, N. Y. (50).
Eno, John Chester, 56 East 57th St., New York, N. Y. (49).
Epstean, Edward, 141 East 25th St., New York, N. Y. (57).
Erlanger, A., 65 Worth St., New York, N. Y. (57).
Erwin, A. T., Associate Prof. of Horticulture, Iowa State College, Ames, Ia. (54). G
Esbjorn, C. L., 9th Ave. and 34th St., Rock Island, Ill. (58).
Eshner, Augustus A., M. D., Prof. of Clinical Medicine, Phila. Polyclinic, 1019 Spruce St., Philadelphia, Pa. (54). K
Essary, Samuel Henry, Asst. in Botany, Univ. of Tenn., Knoxville, Tenn. (54). G
Estabrook, A. F. 15 State St., Boston., Mass. (57).
Esterly, Calvin Olin, 2350 Ellsworth St., Berkeley, Cal. (53). F
ESTES, DANA, Brookline, Mass. (29). H I
*Evans Alexander W., M. D., 67 Mansfield St., New Haven, Conn. (45). 1903. G
Evans, Britton D., M. D., Medical Director of N. J. State Hospital, Morris Plains, N. J. (51). K
*Evans, Henry Brown, College Hall, Univ. of Penna., Philadelphia, Pa. (48). 1906. A
Evans, Illbyd Buller Pole, Dept. Agriculture, P. O. 434, Pretoria, Transvaal. (55). G
Evans, Samuel G., 211 Main St., Evansville, Ind. (39). F
*Evans, Walter Harrison, Ph. D., Department of Agriculture, Washington, D. C. (52). 1906. G
*Evans, Wm. Lloyd, Asst. Prof. Chemistry, Ohio State University, Columbus, Ohio. (57). 1908. C
Eveland, Arthur John, Bureau of Science, Department of the Interior, Manila, P. I. (55). E
*Evermann, Barton Warren, Bureau of Fisheries, Department of Commerce and Labor, Washington, D. C. (52). 1905. F
Evers, Edward, M. D., 1861 N. Market St., St. Louis, Mo. (28). F H
Ewell, Marshall D., M. D., 59 Clark St., Chicago, Ill. (57). C K
Ewen, John M., 740 Rookery Bldg., Chicago, Ill. (58).
*Eycleshymer, Albert Chauncey, Medical Department, St. Louis University, St. Louis, Mo. (53). 1906. K
*Eyerman, John, "Oakhurst," Easton, Pa. (33). 1889. C E
Eyster, John A. English, Instructor in Physiology, Johns Hopkins University, 1700 Linden Ave., Baltimore, Md. (57). K
Fagnani, Rev. Chas. P., D. D., 700 Park Ave., New York, N. Y. (57).
Fahrig, Ernst, 3642 Old York Road, Philadelphia, Pa. (51). C
*Fairbanks, Rev. Henry, Ph. D., St. Johnsbury, Vt. (14). 1874. A B D

Fairchild, B. T., 76 Laight St., New York, N. Y. (36).
*Fairchild, David Grandison, U. S. Dept. Agriculture, Washington, D. C. (47). 1898. G
*Fairchild, Prof. H. L., Univ. of Rochester, Rochester, N. Y. (28). 1883. E F
Falconer, William, Superintendent, Allegheny Cemetery, Pittsburg, Pa. (29).
*Falding, Frederic J., Consulting Chemical Engineer, 52 Broadway, New York, N. Y. (50). C
Fallon, G. W. R., 281 Fourth Ave., New York, N. Y. (57).
*Fanning, John T., Consulting Engineer, Kasota Bldg., Minneapolis, Minn. (29). 1885. D
Farabee, William Curtis, Ph. D., Instr. in Anthropology, Harvard University, Peabody Museum, Cambridge, Mass. (54). H
*Fargis, Rev. Geo. A., S. J., 801 West 181st St., New York, N. Y. (40). 1892.
Farley, Godfrey Pearson, 600 W. 146th St., New York, N. Y. (51). D
*Farlow, Dr. W. G., 24 Quincy St., Cambridge, Mass. (20). 1875. G
Farnham, Amos W., Head of Dept. of Geography, State Normal School, Oswego, N. Y. (54). E
Farnham, Amos W., State Normal School, Oswego, N. Y. (54). E
Farnsworth, C. H., 1230 Amsterdam Ave., New York, N. Y. (57).
Farnsworth, Philo J., M. D., Baton Rouge, La. (50). K
*Farquhar, Henry, Census Bureau, Washington, D. C. (33). 1886. A B G I
Farr, Marcus S., Sc. D., Princeton Univ., Princeton, N. J. (49). E
*Farrand, Livingston, M. D., Columbia University, New York, N. Y. (50). 1902. H
Farrington, Oliver Cummings, Field Museum of Nat. History, Chicago, Ill. (58). E
Farwell, Elmer S., Consulting Engineer, 309 Broadway, New York, N. Y. (51). A D
Farwell, Robert Benneson, C. E., 62 Vinal Ave., Somerville, Mass. (47). D
*Fassig, Oliver Lanard, U. S. Weather Bureau, Bluemont, Va. (46). 1899. B
Fatman, Morris, 14–16 White St., New York, N. Y. (57).
*Faught, John B., Professor of Mathematics, Northern State Normal School, Marquette, Mich. (50). 1907. A
Faull, J. Horace, Lecturer in Botany, Univ. of Toronto, Toronto, Canada. (54). G
Favill, Dr. Henry Baird, 1116-100 State St., Chicago, Ill. (58). K
Fawcett, William, Director, Dept. of Public Gardens and Plantations, Hope Gardens, Kingston, Jamaica, B. W. I. (53). G

*Fay, Henry, Professor of Chemistry, Mass. Inst. Technology, Boston, Mass. (57). 1908. C

Fay, L. G., Naval Office, 20 Exchange Place, New York, N. Y. (50).

Fellows, Charles S., 912 Chamber of Commerce, Minneapolis, Minn. (34). F

*Felt, Dr. Ephraim Porter, State Entomologist, Albany, N. Y. (44). 1899. F

*Fenneman, Nevin M., Ph. D., Univ. of Cincinnati, Cincinnati, Ohio. (51). 1903. E

Fenner, Robert Coyner, Instructor in Physics, Cornell University, 531 E. State St., Ithaca, N. Y. (53). B

Fényes, Adalbert, M. D., P. O. Box W, Pasadena, Cal. (51). K

*Ferguson, Alexander McGowan, Sherman, Texas. (51). 1905. G

Ferguson, L. L., 155 Broadway, New York, N. Y. (52). B

*Ferguson, Margaret C., Assoc. Prof. of Botany, Wellesley College, Wellesley, Mass. (54). 1906. G

Fergusson, Juliana A., Halesite, Suffolk Co., N. Y. (57).

Fernekes, G., Ph. D., 109 Clark St., Houghton, Mich. (57). C

*Fernow, Bernhard E., Ithaca, N. Y. (31). 1887. G I

Ferry, Mansfield, Yale Club, 30 West 44th St., New York, N. Y. (58).

*Fessenden, Reginald A., Prof., care of National Electric Signalling Co., 8th and Water Sts., Washington, D. C. (47). 1899. A B

Fetterman, John Colvin, Castle Shannon, Pa. (51). E F

*Fewkes, Dr. J. Walter, Bur. of American Ethnology, Washington, D. C. (48). 1900. H

*Field, Herbert Haviland, Ph. D., Director Concilium Bibliographicum, Zürich-Neumünster Kollikerstr 9, Zürich, Switzerland. (54). 1908. F

Field, Irving Angell, Professor of Biology, Western Maryland Col., Westminster, Md. (57). C F G

Field, W. L. W., Milton Academy, Milton, Mass. (47). F

FIELD, WM. B. OSGOOD, 645 Fifth Ave., New York, N. Y. (57).

Fielde, Adele M., care of Seattle Nat'l Bank, Seattle, Wash. (57). H

Finch, Edward Ridley, 37 Fifth Ave., New York, N. Y. (57).

Finch, Edward Ridley, 37 Fifth Ave., New York, N. Y. (57).

Finch, John Wellington, State Geologist, Jacobson Bldg., Denver, Colo. (50). E

Findlay, Merlin C., Professor of Biology, Park College, Parkville, Mo. (50). F

*Fink, Prof. Bruce, Miami University, Oxford, Ohio. (45). 1899. G

Finley, Norval Howard, 7229 Hermitage St., Belmar Station, Pittsburg, Pa. (52). C

Fireman, Peter, Ph. D., Cosmos Club, Washington, D. C. (45). D

*Firmstone, F., Easton, Pa. (33). 1887. D

Fisch, Dr. Carl, 3212 Pine St., St. Louis, Mo. (53). K

Fischer, Charles E. M., M. D., 477 Rice St., Chicago, Ill. (53). F

*Fischer, Louis Albert, Bureau of Standards, U. S. Department of Commerce and Labor, Washington, D. C. (47). 1906. A B C

Fischer, Richard, Ph. D., Univ. of Wisconsin, Madison, Wis. (58). C

Fish, Charles Henry, M. E., General Manager, Cocheco Mfg. Co., Dover, N. H. (51). D

*Fish, Pierre A., D. Sc., Professor of Comparative Physiology and Pharmacology, Cornell University, Ithaca, N. Y. (49). 1901. K

Fishberg, Maurice, 23 East 88th St., New York, N. Y. (57).

*Fishburne, Edward Bell, Jr., President Hoge Memorial Military Academy, Blackstone, Va. (51). 1906. A D

Fisher, Carl D., M. D., 1661 Franklin St., Denver, Colo. (55).

Fisher, Cassius Asa, Assistant Geologist, U. S. Geological Survey, Washington, D. C. (55). E

Fisher, Elizabeth F., Assoc. Prof. of Geology, Wellesley College, Wellesley, Mass. (57). E

Fisher, George Egbert, University of Penn., Philadelphia, Pa. (51).

Fisher, George H., 84 Broadway, Brooklyn, N. Y. (57).

Fisher, Geo. J., 3 W. 29th St., New York, N. Y. (57).

Fisher, Henry Wright, 5403 Friendship Ave., Pittsburg, Pa. (51). D

*Fisher, Irving, Ph. D., Dept. of Political Economy, Yale University, 460 Prospect St., New Haven, Conn. (50). 1901. A I

Fisher, Robert Jones, 614 F St., N. W., Washington, D. C. (50). D

Fisher, Willard James, 811 E. State St., Ithaca, N. Y. (53). B

Fisk, Arthur Lyman, M. D., 41 West 50th St., New York, N. Y. (57). K

Fisk, Herbert F., 203 Michigan Ave., Chicago, Ill. (50).

*Fiske, Prof. Thomas S., Columbia University, New York, N. Y. (50). 1901. A

Fiske, Wilbur A., Pasadena, Cal. (51). B

*Fitz, George W., M. D., 483 Beacon St., Boston, Mass. (47). 1898. H

Fitz Gerald, Francis A. J., P. O. Box 118, Niagara Falls, N. Y. (50). C

*Fitzpatrick, Thomas J., Box 497, Iowa City, Iowa. (52). 1905. G

Fitz-Randolph, Raymond Bernard, Director State Laboratory of Hygiene, Trenton, N. J. (54). C K

*Flather, John J., Professor of Mechanical Engineering, University of Minnesota, Minneapolis, Minn. (44). 1896. D

Fleming, John A., R. F. D. No. 1, Drummond, Bethesda, Md. (48).

Flemming, Dudley D., Gas Engineer, 259 Washington St., Jersey City, N. J. (50). C D

*Fletcher, Miss Alice C., Peabody Museum, Cambridge, Mass. (29). 1883. H

FLETCHER, ANDREW, 339 West 77th St., New York, N. Y. (50).

*Fletcher, Horace, care Barrett Mfg. Co., 17 Battery Place, New York, N. Y. (54). 1908. I K

*Fletcher, James, Ph. D., Dominion Entomologist, Experimental Farm, Ottawa, Can. (31). 1883. F

*Fletcher, Robert, M. D., Army Medical Museum and Library, Washington, D. C. (29). 1881. F H

*Fletcher, Robert, Ph. D., Director of Thayer School of Civil Engineering, Hanover, N. H. (51). 1902. D

*Flexner, Simon, The Rockefeller Institute for Medical Research, 66th St. and Ave. A, New York, N. Y. (52). 1905. K

Flickinger, Junius R., Sc. D., Principal of Normal School, Pres. Pa. Educational Assn., Normal School, Lock Haven, Pa. (51).

*Flint, Albert S., Washburn Observatory, Madison, Wis. (30). 1887. A

*Flint, Austin, M. D., LL. D., 118 E. 19th St., New York, N. Y. (50). 1901. F K

*Flint, James M., M. D., U. S. N., Stoneleigh Court, Washington, D. C. (28). 1882. F

Flint, Dr. Joseph Marshall, 311 Temple St., New Haven, Conn. (58).

*Focke, Theodore M., Case School of Applied Science, Cleveland, Ohio. (44). 1903. A B

*Foley, Prof. Arthur Lee, Indiana University, Bloomington, Ind. (46). 1900. B

Folkmar, Daniel, D. S. S., D. U., Paris, 368 Cass St., Milwaukee, Wis. (46). H I

*Folsom, Justus Watson, Sc. D., Associate in Entomology, University of Illinois, Urbana, Ill. (53). 1906. F

*Foote, Allen Ripley, 18 Board of Trade Bldg., Columbus, Ohio. (52). 1905. I

Foote, James S., M. D., Creighton Medical College, Omaha, Neb. (50). F K

Foote, Roger L., 217 La Salle St., Chicago, Ill. (58).

*Foote, Warren M. 418 S. Wycombe Ave., Lansdowne, Pa. (50). 1906. C

Forbes, Robert H., Prof. of Chemistry, Univ. of Arizona, Tucson, Ariz. (50). C

*Forbes, Stephen Alfred, Ph. D., State Entomologist, Univ. of Ill., Urbana, Ill. (55). 1908. F

Ford, Prof. Arthur H., Professor of Electrical Engineering, Univ. of Iowa, Iowa City, Iowa. (52). D

Forrester, Robert, P. O. Box 1254, Salt Lake City, Utah. (57).

FORTMANN, HENRY FREDERICK, President Alaska Packers Ass'n, 308 Market St., San Francisco, Cal. (54). D

Forwood, William Henry, M. D., U. S. A., 1425 Euclid Place, N.W., Washington, D. C. (52). K

Foster, Macomb G., P. O. Box 1120, New York, N. Y. (49).

Foster, William, Newburgh, N. Y. (50). I

*Foulk, Charles W., Assist. Professor of Analytical Chemistry, Ohio State Univ., Columbus, Ohio. (51). 1906. C

Fowler, J. V., M. D., 312 Grand Ave., Chicago, Ill. (58).

Fox, Charles James, M. D., 706–708 Connecticut Mutual Bldg. 36 Pearl St., Hartford, Conn. (51). K

*Fox, Henry, Ph. D., 4440 North 19th St., Philadelphia, Pa. (52). 1906. F

Fox, Philip, Carnegie Assistant, Yerkes Observatory, Williams Bay, Wis. (53). A

*Fox, William, Associate Professor Physics, College of the City of New York, New York, N. Y. (50). 1906. B D

Fox, William A., 535 So. Normal Parkway, Chicago, Ill. (58). D

Foxworthy, Fred. William, B. S., Bureau of Science, Manila, P. I. (52). G

*Fracker, G. Cutler, Professor of Philosophy and Psychology, Coe College, Cedar Rapids, Iowa. (52). 1905. H

Fraenkel, Dr. Joseph, 46 East 75th St., New York, N. Y. (50). F K

Francis, Charles Kenworthy, Prof. of Chemistry, University of Illinois, Urbana, Ill. (50). C

Francisco, M. Judson, 49 Merchants Row, Rutland, Vt. (50). I

Frank, Henry, 378 Vanderbilt Ave., Brooklyn, N. Y. (57).

Frankenstein, Dr. Victor Samuel, 4534 Vincennes Ave., Chicago, Ill. (58). K

*Frankforter, George B., Dean of the School of Chemistry, University of Minnesota, Minneapolis, Minn. (43). 1901. C

*Frankland, Frederick W., "Okataina," Foxton, Manawater, N. Z. (50). 1906. A

*Franklin, Mrs. C. Ladd, Johns Hopkins Univ., Baltimore, Md. (47). 1899. H

*Franklin, Edward Curtis, Ph. D., Stanford University, Cal. (47). 1900. B C

*Franklin, William S., Lehigh University, So. Bethlehem, Pa. (36). 1892. B

Franz, Dr. Shepherd Ivory, Prof. of Physiology, George Washington University, Washington, D. C. (55). K

*Fraps, George Stronach, Associate Chemist Agr. Exper. Sta., College Station, Tex. (54). 1906. C

Frasch, Hans A., Exchange Court, 52 Broadway, New York, N. Y. (56).

Fraser, George C., 1 Nassau St., New York, N. Y. (57).

Fraser, Samuel, Box 215, Geneseo, N. Y. (58). G

Frazer, John, Ph. D., 928 Spruce St., Philadelphia, Pa. (58). C

*FRAZER, DR. PERSIFOR, Room 1082, Drexel Building, Philadelphia, Pa. (24). 1879. C E

Frazier, Charles H., 133 So. 18th St., Philadelphia, Pa. (54).

Frazier, W. W., 400 Chestnut St., Philadelphia, Pa. (54).

*Frear, William, State College, Pa. (33). 1886. C

*Frederick, Charles Warnock, U. S. Naval Station, Tutuila, Samoa. (50). 1906. A B C

*Frederickson, Matt, General Delivery, Washington, D. C. (57). 1908. A

Free, Edward Elway, Bureau of Soils, Dept. of Agric., Washington, D. C. (58). C

*Freedman, William Horatio, Professor of Electrical Engineering, University of Vermont, Burlington, Vt. (50). 1901. B B

Freeman, Charles, Ph. D., Director of Clark Chemical Laboratory, Westminster College, New Wilmington, Pa. (50). C

Freeman, Miss Harriet E., 37 Union Park, Boston, Mass. (57). E G

*Freer, Prof. Paul C., Bureau of Science, Manila, P. I. (39). 1891. C

Freley, Jasper Warren, M. S., Professor of Physics, Wells College, Aurora, N. Y. (45). B E

*French, George Hazen, 912 So. Normal Ave., Carbondale, Ill. (54). 1906. F G

French, Owen B., U. S. Coast and Geodetic Survey, Washington, D. C. (52). A D E

*French, Prof. Thomas, Jr., 40 Brentford Place, Buffalo, N. Y. (30). 1883. B

Frerichs, Dr. Frederick W., 3828 Westminster Place, St. Louis, Mo. (58). C

Frick, Prof. John H., Dept. of Mathematics, Central Wesleyan College, Warrenton, Mo. (27). A B E

Friedenwald, Harry, M. D., Associate Prof. of Ophthalmology and Otology, College of Phys. and Surgs., 1029 Madison Ave., Baltimore, Md. (51). K

Friend, Samuel Henry, M. D., 406 Irving Place, Milwaukee, Wis. (51). K

Frierson, L. S., Frierson, La. (54). F

*Fries, Dr. Harold H., 92 Reade St., New York, N. Y. (40) 1898. C

Fries, J. August, State College, Pa. (57). C

Fries, John W., Winston-Salem, N. C. (56). C

FRISBIE, J. F., M. D., Box 455, Newton, Mass. (29). E H

*Frisby, Prof Edgar, 1607 31st St., N. W., Washington, D. C. (28). 1880. A

Frissell, A. S., President of the Fifth Avenue Bank of N. Y., 530 5th Ave., New York, N. Y. (52). I

*Frissel, Lewis Fox, 113 E. 56th St., New York City. (57). 1908. K

Frost, Arthur Barzilla, 33 Holyoke St., E. Cleveland, Ohio. (53). C

*Frost, Edwin Brant, Yerkes Observatory, Williams Bay, Wis. (38). 1890. A B

Frost, Miss Lilla Ninette, Harvard, Worcester Co., Mass. (57). G

*Frost, William Dodge, Instructor in Bacteriology, University of Wisconsin, Madison, Wis. (50). 1906. G K

FROTHINGHAM, MRS. FREDERICK, care Alex. Wright, Esq., Fullerton, Cal. (31). A F I

Frugone, Frank L., 178 Park Ave., New York, N. Y. (57).

Fry, Charles, 21 Commonwealth Ave., Boston, Mass. (53). I

Frye, Theodore Christian, Professor of Botany, University of Washington, Seattle, Washington. (53). G

Fryette, Harrison H., 1307-8 Auditorium Tower, Chicago, Ill. (58).

*Fuertes, Louis Agassiz, Cornell Heights, Ithaca, N. Y. (54). 1906. F

Fulda, Clemens, M. D., 107 Kent St., Brooklyn, N. Y. (57). K

*Fuller, Caleb Allen, Ph. D., University of Wis., Madison, Wis. (54). 1906. F

Fuller, Charles Gordon, M. D., 500 Reliance Building, Chicago, Ill. (35). F K

FULLER, FRANK, 61 Fifth Ave., New York, N. Y. (57).

*Fuller, George W., 170 Broadway, New York, N. Y. (50). 1903. K

*Fuller, Prof. Homer T., Fredonia, N. Y. (35). 1891. C E

*Fuller, Melville W., LL.D., Chief Justice U. S. Supreme Court, 1801 F St., N.W., Washington, D. C. (40). 1901. I

Fuller, Merton Leonard, Prof. of Meteorology, St. Lawrence Univ., Canton, N. Y. (58). A E I L

*FULLER, MYRON L., 104 Belmont Ave., Brockton, Mass. (50). 1905. E

Fullmer, Edward Lawrence, Baldwin Univ., Berea, Ohio. (50). F

*Fulton, Robert B., Miller School P. O., Virginia. (21). 1887. A B

Furlow, Floyd Charles, V. P., Plunger Elevator Co., 17 Battery Place, New York, N. Y. (50). D

*Furness, Caroline E., Ph. D., Vassar College, Poughkeepsie, N. Y. (47). 1899. A

Furst, Clyde, Secretary of Teachers College, Columbia University, New York, N. Y. (52).

*Gable, George Daniel, Ph. D., Prof. of Mathematics, Univ. of Wooster, Wooster, Ohio. (40). 1906. A B

Gaff, Thomas T., 1520 20th Street, N.W., Washington, D. C. (52).

*Gage, Prof. Simon Henry, 4 South Ave., Ithaca, N. Y. (28). 1881. F

*Gage, Mrs. Susanna Phelps, 4 South Ave., Ithaca, N. Y. (48). 1900. F

Gage-Day, Mary, M. D., 207 Wall St., Kingston, N. Y. (51). K

Gager, C. Stuart, New York Botanical Garden, Bronx Park, New York, N. Y. (50). F G

Gahagan, William L., M. D., care of U. S. Casualty Co., 141 Broadway, New York, N. Y. (51). K

*Galbraith, Prof. John, University of Toronto, Toronto, Can. (38). 1889. D

*Gale, Arthur Sullivan, Asst. Prof. of Mathematics, Univ. of Rochester, Rochester, N. Y. (54). 1906. A

Gale, Henry G., Univ. of Chicago, 5646 Kimbark Ave., Chicago, Ill. (58).

*Galloway, B. T., U. S. Dept. Agriculture, Washington, D. C. (37). 1890. G

*Galloway, Thomas Walton, James Millikin University, Decatur, Ill. (45). 1901. F G

Ganong, Walter Kierstead, Prof. of Electrical Engineering, Univ. of Maine, Orono, Me. (57). D

*Ganong, Wm. F., Professor of Botany, Smith College, Northampton, Mass. (49). 1900. G

*Ganz, Albert Frederick, M. E., Professor of Applied Electricity, Stevens Institute, Hoboken, N. J. (52). 1906. A B D

Garber, John Frederick, Yeatman High School, St. Louis, Mo. (56).

Garcin, Ramon D., M. D., 2618 E. Broad St., Richmond, Va. (51). K

Gardiner, Rev. Frederic, Jr., Yeates School, Lancaster, Pa. (47). F H

Gardner, Rev. Corliss B., Spencerport, N. Y. (29). A B I

*Garman, Prof. Samuel, Museum of Comparative Zoology, Cambridge, Mass. (20). 1874. E F

Garner, James Bert, Professor of Chemistry, Wabash College, Crawfordsville, Ind. (53). C

Garrett, Albert O., 615 South 9th East St., Salt Lake City, Utah. (50). G

Garriot, Edward B., U. S. Weather Bureau, Washington, D. C. (49).

Garrison, Harriet E., M. D., 105 E. Second St., Dixon, Ill. (51). K

Garvin, John B., Instructor in Chemistry, East Side High School, Denver, Colo. (50). C

Gary, Lester B., Instructor in Biology, Central High School, Buffalo, N. Y. (53). F

Gasche, Ferdinand G., 7212 Merrill Ave., Chicago, Ill. (58). A D

*Gates, Fanny Cook, Instructor in Physics, Woman's College, Baltimore, Md. (50). 1907. A B

Gates, Reginald Ruggles, Dept. of Botany, Univ. of Chicago, Chicago, Ill. (58). G

Gault, Franklin B., President Univ. of South Dakota, Vermillion, S. D. (43).

Gaumnitz, D. A., Prof. St. Anthony Park Experimental Sta., St. Paul, Minn. (55). F

Gause, Fred Taylor, Manager, Standard Oil Co. of New York, T. and B. Dept., Singapore, India. (40).

Gauss, Robert, "Denver Republican," Denver, Colo. (50). I

Geballe, Pauline, Greene, N. Y. (57). B C

Geib, Frank Julius, M. D., 2090 East 96 St., Cleveland, Ohio. (57). K

Geisler, Joseph F., New York Mercantile Exchange Buildings, cor. of Hudson and Harrison Sts., New York, N. Y. (50).

Geisse, Wm. F. G., 25 High St., Montclair, N. J. (57).

Geissler, Ludwig Reinhold, Assistant in Psychology, Cornell University, 312 Huestis St., Ithaca, N. Y. (56). H

*GENTH, FRED. A., 222 Walnut St., Philadelphia, Pa. (32). 1900. C E

*Genthe, Karl Wilhelm, Ph. D., Professor of Natural History, Trinity College, Hartford, Conn. (50). 1901. F

Gentry, William D., 692 La Salle Ave., Chicago, Ill. (58).

George, Russell D., Professor of Geology, University of Colorado, Boulder, Colo. (53). E

Gephart, Frank, North Western Univ. Medical School, 24th and Dearborn Sts., Chicago, Ill. (57). C

Gerlach, Charles A., 722 No. Broadway, Yonkers, N. Y. (58).

*Germann, George B., Principal of Public School No. 130, Ocean Parkway and Fort Hamilton Ave., Brooklyn, N. Y. (49). 1901. A

Getman, Frederick H., 811 Atlantic St., Stamford, Conn. (45). B

Gibbs. George, 10 Bridge St., New York, N. Y. (57).

*GIBBS, PROF. WOLCOTT, Newport, R. I. (1). 1896. B C

Gibney, V. P., M. D., 16 Park Ave., New York, N. Y. (58).

*Gies, William J., Dr., College of Physicians and Surgeons, 437 W. 59th St., New York, N. Y. (49). 1901. C

Gifford, Harold, M. D., 405 Karbach Block, Omaha, Neb. (51). K

Gilbert, Arthur W., Alpha Zeta Lodge, Ithaca, N. Y. (58).

*Gilbert, Prof. Charles B., Supt. Public Instruction, 106 Brunswick St., Rochester, N. Y. (50). 1906. I

*GILBERT, G. K., U. S. Geol. Survey, Washington, D. C. (18). 1874. E

Gilbert, J. Allen, M. D., Dekum Bldg., Portland, Oregon. (57). H

*Gilbert, Norman Everett, Professor of Physics, Dartmouth College, Hanover, N. H. (51). 1906. B

Gilbert, Walter M., Asst. Secy. Carnegie Institution of Washington, Washington, D. C. (54).

Gilchrist, John D. F., Ph. D., Government Biologist of Cape Colony, Department of Agriculture, Cape Town, South Africa. (53). F G

Gilchrist, T. Casper, 332 N. Charles St., Baltimore, Md. (52).

*Gildersleeve, Nathaniel, M. D., Assistant in Bacteriology, Laboratory of Hygiene, University of Pennsylvania, Philadelphia, Pa. (52). 1906. K

*Gill, Adam Capen, Cornell University, Ithaca, N. Y. (38). 1894. E

*Gill, Augustus Herman, Mass. Institute Technology, Boston, Mass. (44). 1896. C

Gill, Laura Drake, 1326 19th St. N. W., Washington, D. C. (58).

*Gill, Theodore Nicholas, M. D., Cosmos Club, Washington, D. C. (17). 1874. F

*Gillett, Arthur L., Hartford Theological Seminary, Hartford, Conn. (54). 1906.

Gillett, Henry W., 58 W. 47th St., New York, N. Y. (57).

*Gillette, Clarence P., Professor of Zoology, Agricultural College, Fort Collins, Colo. (50). 1901. F

Gilman, Charles Edward, 305 N. Broadway, Baltimore, Md. (51). E

*Gilman, Daniel C., 614 Park Ave, Baltimore, Md. (10). 1875. E H

Gilmore, John Washington, Prof. of Agronomy, Penn. State College, State College, Pa. (58).

Girault, A. Arsene. care of Office of State Entomologist, Urbana, Ill. (57).

*Girty, George H., Ph. D., U. S. Geol. Survey, Washington, D. C. (48). 1903. E

Given, Arthur, Bureau Chemistry, Dept. Agri., Washington, D. C. (57). C

Glaser, C., Analytical and Consulting Chemist, 22 S. Gay St., Baltimore, Md. (49).

Glasgow, Frank A., M. D., 3894 Washington Ave., St. Louis, Mo. (53). K

Gleason, H. Allan, 511 E. Johns St., Champaign, Ill. (50). G

Gleason, W. Stanton, M. D., 143 Grand St., Newburgh, N. Y. (50). F K

*Glenn, L. C., Ph. D., Adjunct Professor of Geology, Vanderbilt University, Nashville, Tenn. (50). 1903. E

*Glenn, Oliver Edmunds, College Hall, Univ. of Penna., Philadelphia, Pa. (54). 1907. A

GLENNY, WILLIAM H., Buffalo, N. Y. (25).

Glessner, J. J., 1800 Prairie Ave., Chicago, Ill. (58).

Goddard, Henry Herbert, Ph. D., Vineland, N. J. (57).

Godfrey, Chas. C., M. D., 753 Lafayette St., Bridgeport, Conn. (51). K

*Goessmann, Prof. C. A., Mass. Agric. College, Amherst, Mass. (18). 1875. C

Goetze, F. A., Columbia Univ., New York, N. Y. (57).

*Golden, Asher, 1574 Madison Ave., New York, N. Y. (54). 1906. B

Golden, I. J. K., M. D., 617 West North Ave., Chicago, Ill. (58).

Goldfarb, A. Julius, Columbia University, New York, N. Y. (57). 1908. F K

Goldman, Marcus I., U. S. Geol. Survey, Washington, D. C. (58). E

GOLDSBOROUGH, JOHN BYRON, Croton-on-Hudson, N. Y. (57).

*Goldschmidt, S. A., Ph. D., 43 Sedgwick St., Brooklyn, N. Y. (24). 1880. B C E

*Goldsmith, Edw., 658 N. 10th St., Philadelphia, Pa. (29). 1892. B C

*Goldthwait, James Walter, Ph. D., Northwestern Univ., Evanston, Ill. (58). 1908. E

Goldthwaite, Miss Nellie Esther, Ph. D., Rockefeller Institute for Medical Research, 66th St. and Ave. A, New York, N. Y. (47). C

*Gomberg, Moses, Sc. D., Chem. Lab. Univ. of Michigan, Ann Arbor, Mich. (51). 1903. C

*Gooch, Frank Austin, Yale University, New Haven, Conn. (25). 1880. C

*Goodale, Prof. George Lincoln, Botanic Gardens, Cambridge, Mass. (18). 1875. G

Goodale, Hubert Dana, Stamford, R. F. D., Conn. (57). F

*Goodale, Joseph Lincoln, M. D., 397 Beacon St., Boston, Mass. (50). 1906. F K

*Goode, J. Paul, Asst. Prof. of Geography, University of Chicago, Chicago, Ill. (52). 1905. E H I

Goodenow, Valeria Stone, 332 Benefit St., Providence, R. I. (57). F

Goodman, Abraham L., M. D., 263 West 113th St., New York, N. Y. (56). K

*Goodnow, Henry R., 95 Riverside Drive, New York, N. Y. (32). B

*Goodspeed, Arthur Willis, Ph. D., Dept. Physics, University of Pennsylvania, Philadelphia, Pa. (47). 1898. A B

*Goodwin, Harry M., Professor of Physics, Mass. Institute Technology, Boston, Mass. (47). 1901. B

*Goodwin, Rev. James, 76 Garden St., Hartford, Conn. (52). I
Goodyear, William H., Museum of Brooklyn Institute of Arts and Sciences, Eastern Parkway, Brooklyn, N. Y. (43). 1902. H
Gordin, Harry Mann, Northwestern University School of Pharmacy, 380 Chestnut St., Chicago, Ill. (56). C
*Gordon, Charles Henry, Ph. D., Univ. of Tennessee, Knoxville, Tenn. (52). 1905. E
Gordon, Clarence E., Prof. Zoology, Amherst Agric. College, Amherst, Mass. (57). F
*Gordon, Clarence McC., Ph. D., Professor of Physics, Central University, Danville, Ky. (48). 1906. A B C
Gordon, Gustavus Ede, Scientific Adviser, Walker-Gordon Laboratory Co., Chevy Chase, Md. (50). F
Gordon, Reginald, Newburgh, N. Y. (50).
Gordon, Robert H., Cumberland, Md. (48). E F
Gore, J. W., Professor Physics, Univ. of N. C., Chapel Hill, N. C. (51). B
*Gorham, Frederic P., Associate Professor of Biology, Brown University, Providence, R. I. (53). 1908. F K
Gorton, Frederick R., Ph. D., Michigan State Normal College, Ypsilanti, Mich. (58). B
Goss, Willard L., U. S. Dept. of Agric., Washington, D.C. (57). G
*Goss, Prof. Wm. F. M., Dean of College of Engineering, Univ. of Ill., Urbana, Ill. (39). 1896.
*Gossard, Harry Arthur, Professor of Entomology, Ohio Agr. Exper. Sta., Wooster, Ohio. (50). 1906. F
Gottschalk, Victor Hugo, Prof. of Chemistry, Mo. School of Mines, Rolla, Mo. (54). C
*Gould, Charles Neton, Professor of Geology, University of Oklahoma, Norman, Okla. (53). 1908. E
*Gould, George Milbry, M. D., 1722 Walnut St., Philadelphia, Pa. (51). 1902. K
Gould, H. P., 114 W St. N.W., Washington, D. C. (52). G
Gouldy, Miss Jenny A., 169 Montgomery St., Newburgh, N. Y. (50). I
*Grabau, Amadeus W., Prof. of Palæontology, Columbia Univ., New York, N. Y. (54). 1905. E
Graef, Edw. L., 58 Court St., Brooklyn, N. Y. (28). F
Graham, Andrew B., S. W. corner of 14th and E Sts., N. W., Washington, D. C. (52). I
Graham, Douglas, M. D., 74 Boylston St., Boston, Mass. (51). K
Graham, James Chandler, Teacher in Phillips Academy, Andover, Mass. (50). C
Graham, John Y., Ph. D., Prof. of Biology, Univ. of Alabama, University, Ala. (54). F G

Graham-Maingot, Ferdinand Joseph, 23 St. Vincent St., Port of Spain, Trinidad. (57).

*Graham, Wm. Joseph, Northwestern National Life Insurance Co., Minneapolis, Minn. (54). 1907. **A I**

Grant, Hugh J., 20 E. 72d St., New York, N. Y. (57).

Grant, Madison, 22 E. 49th St., New York, N Y. (57).

*Grant, Ulysses Sherman, Ph. D., Professor of Geology, Northwestern University, Evanston, Ill. (50). 1902. **E**

Grant, Willis Howard, 148 W. 132d St., New York, N. Y. (50). **C G**

*Granville, William Anthony, Ph. D., Instructor in Mathematics, Yale University, New Haven, Conn. (50). 1906. **A**

*Gratacap, L. P., Ph. B., 77th St. and 8th Ave., New York, N. Y. (27). 1884. **C E F**

Grave, Caswell, Johns Hopkins Univ., Baltimore, Md. (54). **F**

Graves, Frank P., 1623 First Nat'l Bank Bldg., Chicago, Ill. (58).

Graves, W. B., Andover, Mass. (54).

Graves, William W., M. D., 5136 Morgan St., St. Louis, Mo. (58). **K**

*Gray, Prof. Thomas, Rose Polytechnic Institute, Terre Haute, Ind. (38). 1889. **B D**

Gray, Thomas Tarvin, Tidewater Oil Co., Bayonne, N.J. (57). **C**

Graybill, Harry W., Auburn, Ala. (58). **F**

Graydon, Thomas J., Counsellor-at-Law, 603 Masonic Temple, Chicago, Ill. (58).

Greef, J. G. Wm., M. D., 24 W. 91st St., New York, N. Y. (57). **K**

Greeff, Ernest F., 37 W. 88th St., New York, N. Y. (49).

*Green, Arthur L., Purdue University, Lafayette, Ind. (33). 1888. **C**

*Green, Bernard Richardson, Civil Engineer, Supt. of Congressional Library Building, Library of Congress, Washington, D. C. (51). 1903. **B D**

Green, Edgar Moore, M. D., Easton, Pa. (36). **C G H**

Green, Jerome J., Prof. of Physics and Electrical Engineering, Univ of Notre Dame, Notre Dame, Ind. (54). **B D**

Green, Milbrey, M. D., 567 Columbus Ave., Boston, Mass. (29).

*Greene, Arthur Maurice, Jr., 20 Hawthorne Ave., Troy, N. Y. (54). 1905. **D**

Greene, Chas. Lyman, M. D., 150 Lowry Arcade, St. Paul, Minn. (51). **K**

*Greene, Charles Wilson, Ph. D., Professor of Physiology and Pharmacology, State University of Missouri, Columbia, Mo. (50). 1901. **F K**

Greene, G. K., 127 W. Market St., New Albany, Ind. (38)

GREENE, WM. H , N. E. Cor. Arch and 16th Sts., Philadelphia, Pa. (54).

*Greenman, Jesse More, 5473 Ellis Ave., Chicago, Ill. (47). 1899. G
Greenough, Chas. 24 West 45th St., New York, N. Y. (57).
Greenough, John, 59 Wall St., New York, N. Y. (49).
Greenway, James C., M. D., Greenwich, Conn. (53).
*Greenwood, George William, Dunbar, Pa. (54). 1906. A
Greer, Hon. Henry Harrison, Mt. Vernon, Ohio. (56). I
Greer, Jas. R., University of Chicago, Chicago, Ill. (57). K
Greeson, W. A., City Hall, Grand Rapids, Mich. (58).
Gregg, William H., M. D., Port Chester, N. Y. (49).
*Gregory, Miss Emily Ray, Ph. D., Professor of Biology, Wells College, Aurora, N. Y. (50). 1901. F
*Gregory, Herbert E., Yale University, New Haven, Conn. (50). 1902. E
Gregory, Dr. M. S., Bellevue Hospital, New York, N. Y. (57). K
Gregory, Wm. K., 2313 Loring Place, University Heights, New York, N. Y. (57).
Gribbel, John, 1513 Race St., Philadelphia, Pa. (54).
Griffin, John Joseph, Ph. D., Prof. of Chemistry, Catholic University of America, Washington, D. C. (54). C
Griffiths, David, U. S. Dept. Agriculture, Washington, D. C. (49). 1903. G
Griggs, Robert F., Ohio State Univ., Columbus, Ohio. (52). G
Grimm, Carl Robert, Bridge and Structural Engineer, Standish Arms, 167 Columbia Heights, Brooklyn, N. Y. (51). D
*Grimsley, George Perry, Ph. D., Morgantown, West Virginia. (51). 1905. E
*Grindley, Dr. Harry Sands, Associate Professor of Chemistry, University of Illinois, Urbana, Ill. (46). 1898. C
*Grinnell, George Bird, 346 Broadway, New York, N. Y. (25). 1885. E F
Griscom, C. A., Jr., 21 Washington Square N., New York, N. Y. (57).
Griswold, Clifford S., Head of Dept. of Physics, Groton School, Groton, Mass. (50). B
*Griswold, Leon Stacy, School of Mines and Metallurgy, University of Mo., Rolla, Mo. (38). 1893. E
*Groat, Benjamin Feland, Prof. of Mechanics and Mathematics, University of Minnesota, Minneapolis, Minn. (51). 1903. A
Groom, Wallace P., 486 Jefferson Ave., Brooklyn, N. Y. (57).
Grossman, Edward L., M. D., Coliseo Nuevo No. 440, Mexico, D. F. (53). K
*Grosvenor, Gilbert H., Editor, National Geographic Magazine, Hubbard Memorial Hall, Washington, D. C. (48). 1906. E I

Groszmann, Dr. Maximilian P. E., Director of the Groszmann School, Johnston's Drive, Plainfield, N. J. (52). K

*Grout, Abel J., Boys' High School, Brooklyn, N. Y. (47). 1899. G

Grout, George P., North Dakota Agric. Col., Agricultural College, North Dak. (58).

*Grover, Frederick Orville, Professor of Botany, Oberlin College, Oberlin, Ohio. (50). 1906. G

Grower, Geo. G., 48 Cottage Ave., Ansonia, Conn. (43). B D

Gruenberg, Benjamin C., Teacher of Biology, De Witt Clinton High School, 69 W. 88th St., New York, N. Y. (52). G

*Gruener, Hippolyte, Adelbert College, Cleveland, Ohio. (44). 1898.

Grugan, F. Justice, care of Foote Mineral Co., 607 Chestnut St., Philadelphia, Pa. (58).

Gucker, Frank T., 3420 Hamilton St., Philadelphia, Pa. (54).

Gudeman, Edward, Ph. D., Suite 903–4, Postal Telegraph Bldg., Chicago, Ill. (57). C

Guenther, A. E., Sta. A, Univ. of Nebraska, Lincon, Neb. (57).

GUGGENHEIM, WM., 500 Fifth Ave., New York, N. Y. (57).

Guilbeau, B. H., Professor of Zoölogy and Entomology, Louisiana University, Baton Rouge, La. (54). F

Guinzburg, Richard A., 234 Central Park West, New York, N. Y. (57).

Guiteras, Dr. Juan, Hospital, "Las Animas," Havana, Cuba. (57). K

Gulick, Addison, care of Mrs. F. F. Jewett, Oberlin, Ohio. (58).

Gulick, Luther Halsey, M. D., 500 Park Ave., New York, N. Y. (52). K

*Gulliver, F. P., Ph. D., Norwich, Conn. (40). 1900. E

*Gummere, Henry Volkmar, 229 S. 44th St., Philadelphia, Pa. (51). 1906. A B

[Gunn, Selskar Michael, State Univ. of Iowa, Iowa City, Iowa. (58). K

Gunsaulus, Rev. Frank W., President, Armour Institute, Chicago Ill. (53).

Gunther, Chas. Otto, Asst. Prof. of Mathematics and Mechanics, Stevens Inst. of Technology, Hoboken, N. J. (57). A

Gurgenianz, Dr. Gregor, Oilport, San Luis, Obispo Co., Cal. (58). C

Guth, Morris S., M. D., Supt. State Hospital for the Insane, Warren, Pa. (51). K

*Guthe, Karl E., Ph. D., Professor of Physics, State University of Iowa, Iowa City, Iowa. (45). 1897. B

Guthrie, Dr. Chas. Claude, Prof. of Physiology, Washington Univ., St. Louis, Mo. (58). K

Guthrie, Joseph E., Instructor in Zoology, Iowa State College, Ames, Iowa. (52). F

*Guyer, Prof. M. F., University of Cincinnati, Cincinnati, Ohio. (52). 1908. F G

Hadley, Artemus N., Box 313, Indianapolis, Ind. (51). D

*Hadley, Stephen Marshall, Ph. D., Prof. of Mathematics and Astronomy, Penn College, Oskaloosa, Iowa. (54). 1906. A

Haecker, Theophilus L., St. Anthony Park, Minn. (58). C

*Hagar, Stansbury, 48 Wall St., New York, N. Y. (43). 1899.

Hagenow, Charles F., 1262 Rokeby St., Chicago, Ill. (58). B

*Hague, Arnold, U. S. Geol. Survey, Washington, D. C. (26). 1879. E

*Hague, James D., 18 Wall St., New York, N. Y. (50). 1903. E

HAGUE, WM. A. B., A. M., P. O. Box 696, Douglas, Ariz. (57). D E

Hagy, Claude B., Central High School, Philadelphia, Pa. (57). B C

Hahn, C. W., 601 West 182d St., New York, N. Y. (57).

Hahn, Walter L., 332 Fess Ave., Bloomington, Ind. (57). F

Hailman, James D., C. E., 5815 Wilkins Ave, Pittsburgh, Pa. (51). A B

Haines, George Clark, Durand, Ill. (58).

*Haines, Reuben, Haines and Chew Sts., Germantown, Philadelphia, Pa. (27). 1889. B C

*Haines, Thomas H., Ph. D., Assistant Professor of Philosophy, Ohio State University, Columbus, Ohio. (52). 1905. H

Hairgrove, John Whitlock, M. D., 339 E. State St., Jacksonville, Ill. (53). K

*Hale, Albert C., Ph. D., 487 Halsey St., Brooklyn, N. Y. (29). 1886. B C

Hale, George D., 1059 Lake Ave., Rochester, N. Y. (41).

*Hale, George E., Mt. Wilson, Cal. (37). 1891. A B C

Hale, H. Warren K., 1510 N. Broad St., Philadelphia, Pa. (54). A B

*Hale, William H., Ph. D., Supt. Public Baths, 40 First Place, Brooklyn, N. Y. (19). 1874. A B C E F H I

Hale, Wm. J., Ph. D., Instructor in Chemistry, Univ. of Michigan, Ann Arbor, Mich. (54). C

*Hall, Asaph, Jr., U. S. Naval Observatory, Washington, D. C. (38). 1890. A

*Hall, Charles E., care Hoffman, Pinther & Co., 3 Independencia 10 Mexico. (53). 1906. E

*Hall, Charles M., Vice President Pittsburg, Reduction Co., Niagara Falls, N. Y. (50). 1903. C

*Hall, Prof. C. W., Dean, College of Engineering, University of Minnesota, Minneapolis, Minn. (28). 1883. D E

Hall, Edwin Bradford, 193 State St., Wellsville, N. Y. (50). C

*Hall, Prof. Edwin H., 5 Avon St., Cambridge, Mass. (29). 1881. B

Hall, Fred J., 4 Benedict Ave., Tarrytown, N. Y. (58).

Hall, Gaylord C., 601 West 137th St., New York, N. Y. (57).

*Hall, James P., 6 Poplar St., Brooklyn, N. Y. (40). 1906. A B

Hall, J. Underwood, M. D., 216 Autumn St., San José, Cal. (51). K

*Hall, Prof. Lyman B., Haverford College, Haverford, Pa. (31). 1884. C

*Hall, Robert William, Lehigh University, South Bethlehem, Pa. (50). 1905. F

*Hall, Thomas C., D. D., Professor of Theology, Union Theological Seminary, 700 Park Ave., New York, N. Y. (54). 1906. I

Hall, Thomas, R. A., 39 East 42d St., New York, N. Y. (57).

Hall, William Bonnell, M. D., Professor of Materia Medica and Physiology, University of the South, Sewanee, Tenn. (51). K

*Hall, William Shafer, Professor of Mining and Graphics, Lafayette College, Easton, Pa. (50). 1906. E

Hall, Wm. T., Mass. Inst. of Technology, Boston, Mass. (57). C

*Hall, Winfield Scott, Ph. D., Professor of Physiology, Northwestern Univ. Med. School, 2431 Dearborn St., Chicago, Ill. (52). 1908. H K

Hallack, H. Tuthill, M. D., West 38th Ave., and Wolff St., Denver, Colo. (51). K

*Hallock, Albert P., Ph. D., 440 First Ave., New York, N. Y. (31). 1896. C

Hallock, Frank Kirkwood, M. D., Cromwell Hall, Cromwell, Conn. (50). F K

*Hallock, Dr. William, Columbia University, New York, N. Y. (40). 1893. B E

*Hallowell, Prof. Susan M., Wellesley College, Wellesley, Mass. (33). 1890. G

Halsey, Robert Hurtin, M. D., 118 West 58th St., New York, N. Y. (56). K

Halstead, Ernest W., Buenaventura, Prov. Pinar del Rio, Cuba. (54). G

*Halstead, Byron D., Professor of Botany and Horticulture, Rutgers College, New Brunswick, N. J. (29). 1883. G

*Halsted, George Bruce, M. D., Box 68, Greeley, Colo. (43). 1896.

*Halstead, William Stewart, 1201 Eutaw Place, Baltimore, Md. (50). 1903. K

Ham, Miss Clara Eleanor, Instructor in Biology, Middleboro, Mass. (53). F

*Hamaker, John Irvin, Professor of Biology, Randolph-Macon Woman's College, College Park, Va. (50). 1901. E F

*Hambach, Dr. G., 1319 Lami St., St. Louis, Mo. (26). 1891. **E F**

Hambleton, J. C., Head of Dept. of Science, East High School, Columbus, O. (58).

HAMERSCHLOG, ARTHUR A., Director, Carnegie Technical Schools, Schenly Park, Pittsburg, Pa. (57). **D**

Hamilton, S. Harbert, 4806 Fairmount Ave., Philadelphia, Pa. (54). **C E H**

Hamlin, Wilber G., M. D., 167 Dearborn St., Chicago, Ill. (58). **K**

Hammar, Alfred G., North East, Pa. (58). **F**

Hammatt, Clarence Sherman, Vice-President, Florida Electric Co., Jacksonville, Fla. (50). **D**

*Hammer, William Joseph, 153 West 46th St., New York, N. Y. (52). 1906. **B**

Hammond, George W., Yarmouthville, Maine. (47).

Hammond, Howard Spurr, 39 West 10th Ave., Columbus, Ohio. (58). **G**

*Hammond, John Hays, 71 Broadway, New York, N. Y. (50). 1901. **D E**

HAMMOND, MRS. JOHN HAYS, 320 Madison Ave., Lakewood, N. J. (50). **H**

*HANAMAN, C. E., Troy, N. Y. (19). 1883. **F**

Hance, Anthony M., 2217 DeLancey Place, Philadelphia, Pa. (51). **C**

Hancock, Charles, Prof. of Civil Engineering and Drawing, Agricultural College, Agricultural College, Miss. (55). **A D**

Hancock, H. Irving, Ferguson-Hancock Laboratory, Blue Point, L. I., N. Y. (56). **C**

*Hancock, Harris, Prof. of Mathematics, Univ. of Cincinnati, Cincinnati, O. (54). 1906. **A**

Hancock, James Cole, M. D., 43 Cambridge Place, Brooklyn, N. Y. (51). **K**

Hancock, Joseph Lane, 3757 Indiana Ave., Chicago, Ill. (58).

Hanger, G. Wallace W., Chief Clerk, U. S. Bureau of Labor, Washington, D. C. (54). **I**

Hankinson, Thomas L., Assistant in Biology, State Normal School, Charleston, Ill. (53). **F**

Hanks, Marshall W., 216 Langdon St., Madison, Wis. (54).

Hansen, Mrs. Hermine Z., Hughes High School, Cincinnati, Ohio. (57).

Hansen. Niels Ebbesen, Prof. of Horticulture, So. Dak. State Coll. of Agric. and Mechanic Arts, Bookings, So. Dak. (58). **G**

Hanson, Hans Olaf, Bayshore Terrace, East Elmhurst, L. I., N. Y. (56).

Harcourt, R., Ontario Agric. College, Guelph, Canada. (58).

*Harding, Everhart Percy, Instructor in Chemistry, University of Minnesota, Minneapolis, Minn. (50). 1901. C

*Harding, Harry A., N.Y. Agricultural Experiment Station, Geneva, N. Y. (48). 1906. G

*Hargitt, Prof. Charles W., Syracuse University, Syracuse, N. Y. (38). 1891. F

Harmon, Mrs. Clifford, Greenwich, Conn. (57).

Harmon, Herbert W., 418 Poplar St., Grove City, Pa. (52). B

Harnly, Henry Jacob, Ph. D., Professor of Biology, McPherson College, McPherson, Kan. (50). F G

*Harper, Henry Winston, M. D., 2208 San Antonio St., Austin, Texas. (45). 1899. C

Harper, James, Jr., 127 E. 28th St., New York, N. Y. (57).

Harper, Joseph Nelson, Prof. of Agric., Clemson College, S. C. (58). G

*Harper, R. A., 324 N. Carroll St., Madison, Wis. (54). 1906. G

Harper, R. H., M. D., Afton, Indian Ter. (50). F H K

Harper, Roland McMillan, Ph. D., North Boulevard, College Point, N. Y. (55). E G

Harpham, Edwin L., 134 Monroe St., Chicago, Ill. (58).

Harrah, C. J., P. O. Box 1606, Philadelphia, Pa. (48). H

Harriman, Norman Follett, Union Pacific Laboratory, Omaha, Neb. (58). C

Harriot, Caroline, Court Inn, Camden, S. C. (58).

*Harris, Abram Winegardner, Sc. D., Pres. Northwestern Univ., Evanston, Ill. (40). 1895. C

Harris, Frederick S., Box 242, Goldfield, Nevada. (50). E

*Harris, J. Campbell, 119 So. 16th St., Philadelphia, Pa. (51). 1907.

*Harris, James Arthur, Sta. Exp. Evolution, Cold Spring Harbor, L. I., New York. (52). 1907. F G

*Harris, Norman MacLeod, Instructor in Bacteriology, Univ. of Chicago, Chicago, Ill. (54). 1906. K

Harris, N. W., 204 Dearborn St., Chicago, Ill. (58).

Harris, Robert Wayne, M. D., 621 Vincennes St., New Albany, Ind. (51). K

*Harris, Rollin Arthur, U. S. C. and G. Survey, Washington, D. C. (47). 1899. A B

*Harris, Uriah R., Captain U. S. N., Naval Station, Olongapo, P. I. (34). 1886. A

Harris, William Denny, 3611 Sansom St., Philadelphia, Pa. (54). B C D

*Harrison, Ross G., Ph. D., 2 Hillhouse Ave., New Haven, Conn. (54). 1906. F

*Harshberger, John W., Instructor in Botany, Univ. of Pa., Philadelphia, Pa. (54). 1906. G

*Hart, Charles A., University of Ill., Urbana, Ill. (51). 1906. F

*Hart, Edw., Ph. D., Lafayette College, Easton, Pa. (33). 1885. C

Hart, George H., 149 East 39th St., New York, N. Y. (58).

*Hart, James Norris, Professor of Mathematics and Astronomy, Univ. of Maine, Orono, Maine. (51). 1906. A

Hart, Rev. Prof. Samuel, Berkeley Divinity School, Middletown, Conn. (22). A

Hart, W. O., 134 Carondelet St., New Orleans, La. (58).

Harter, Leonard L., B. A., U. S. Dept. of Agriculture, Washington, D. C. (55). G

Hartley, Carl P., Dept. of Botany, Univ. of Minnesota, Minneapolis, Minn. (57).

Hartley, Chas. P., Assistant in Plant Breeding, Bureau of Plant Industry, U. S. Dept. Agric., Washington, D. C. (51). G

Hartley, Frank, Principal of Allegheny County Academy, Cumberland, Md. (51). E G

Hartline, D. S., State Normal School, Bloomsberg, Pa. (54). F

Hartman, C. V., Curator of Ethnology, Carnegie Museum, Pittsburg, Pa. (53). H

Hartmann, F. M., Assistant Professor of Physics, Cooper Union, New York, N. Y. (56). B

Hartmann-Kempf, Robert, Ph. D., care of Hartmann & Braun, Frankfort-on-Main, Germany. (54). B

Hartness, James, President of Jones and Lamson Machine Co., Springfield, Vt. (51). D

Hartwell, Burt Laws, Ph. D., Assoc. Chemist, R. I. Agr. Exp. Station, Kingston, R. I. (55). C

*Hartwell, John A., M. D., 50 East 53d St., New York, N. Y. (57). 1908. K

Hartz, Dr. Henry J., 27 Adams Ave. East, Detroit, Mich. (58).

Hartz, J. D. Aug., College Point, N. Y. (43).

Hartzell, J. Culver, Ph. D., Univ. of the Pacific, San José, Cal. (49). E

Harvey, E. Newton, 236 West Horter St., Germantown, Pa. (58). K

Harvey, Le Roy Harris, Prof. of Biology, Yankton College, Yankton, S. D. (54). G

Harvey, Nathan Albert, Ph. D., 223 Summit St., Ypsilanti, Mich. (52). F

Harvey, Wm. Stocker, 119 So. 4th St., Philadelphia, Pa. (47).

*Haskell, Eugene E., College of Civil Engineering, Cornell University, Ithaca, New York. (39). 1896. A B D

*Haskell, Mellen Woodman, Professor of Mathematics, Univ. of California, Berkeley, Cal. (54). 1906. A

Haslam, George J., M. D., 77 West 6th St., Fremont, Neb. (54). **F K**

Hasslacher, Jacob, 100 William St., New York, N. Y. (50).

*HASTINGS, C. S., Sheffield Scientific School of Yale University, New Haven, Conn. (25). 1878. **B**

Hastings, Edwin George, Asst. Bacteriologist, Agr. Exp. Station, Madison, Wis. (50). **F**

Hastings, Thomas Wood, M. D., 43 East 58th St., New York, N. Y. (57). **K**

Hastings, William Walter, Ph. D., 1086 State St., Springfield, Mass. (54).

*Hathaway, Arthur Stafford, Prof. of Mathematics, Rose Polytechnic Institute, Terre Haute, Ind. (58). 1908. **A**

Hatt, Wm. Kendrick, 919 State St., Lafayette, Ind. (57). **D**

*Haupt, Gen. Lewis Muhlenburg, Civil and Consulting Engineer, 107 North 35th St., Philadelphia, Pa. (51). 1903. **D**

Havemeyer, W. F., 32 Nassau St., New York, N. Y. (50).

Haven, William I., 25 Fernwood Road, Summit, N. J. (58).

Hawkins, J. Dawson, Colorado Springs, Colo. (50). **C D**

Hawkins, Layton S., 70 N. Main St., Cortland, N. Y. (57). **F**

Hawkins, Lon A., Bureau of Plant Industry, U. S. Dept. of Agric. Washington, D. C. (58). **G**

Hawxhurst, Robert, Jr., C. E., Gen'l Manager Poderosa Mining Co., Antofagasta, Chile. (53). **D**

*Hay, Prof. Oliver Perry, 1307 Riggs St. N. W., Washington, D. C. (49). 1901. **F**

*Hay, Prof. William P., Western High School, Washington, D. C. (49). 1907.

Hayden, Horace Edwin, Jr., A. B., M. A., Asst. in Geology, Vanderbilt Univ., Nashville, Tenn. (58). **E**

Hayden, Wm. B., 79 Beekman St., New York, N. Y. (57).

*Hayes, C. Willard, U. S. Geological Survey, Washington, D. C. (51). 1905. **E**

*Hayes, Ellen, Professor of Applied Mathematics, Wellesley College, Wellesley, Mass. (52). 1905. **A**

Hayes, George Washington, C. E., Prof. of Chemistry, Pennsylvania Chautauqua, Lebanon, Pa. (51). **C D**

Hayes, Joel Addison, Banker, Colorado Springs, Colo. (51).

*Hayford, John F., C. E., U. S. Coast and Geodetic Survey, Washington, D. C. (46). 1898. **A B D**

Haynes, Prof. Arthur E., College of Engineering, University of Minnesota, Minneapolis, Minn. (45). **A**

*Haynes, Prof. Henry W., 239 Beacon St., Boston, Mass. (28). 1884. **H**

Haynes, Miss Julia Anna, State Normal School, Hyannis, Mass. (47). **F G**

Hays, B. Frank, Sec'y Fraser Tablet Co., 758 West End Ave., New York, N. Y. (49).

*Hays, Willet M., Asst. Secy. Dept. Agriculture, Washington, D. C. (45). 1901. G I

Hazard, Daniel L., U. S. C. and G. Survey, Washington, D. C. (48).

Hazard, Elmer Clark, M. D., Shrewsbury, N. J. (56). C K

*Hazard, Hon. Rowland G., Peace Dale, R. I. (50). 1906.

*Hazen, Tracy Elliott, Ph. D., Barnard College, Columbia University, New York, N. Y. (50). 1902. G

Head, William R., 5471 Jefferson Ave., Hyde Park, Chicago, Ill. (38). F

Headlee, T. J., Ph. D., Kansas State Agric. College, Manhattan, Kansas. (52). F

Headley, Frank Burdette, U. S. Dept. of Agric., Washington, D. C. (58). G

*Heald, Fred. DeForest, Ph. D., Agri. Expt. Sta., Lincoln, Neb. (50). 1903. G

Healy, Daniel J., M. D., Army Medical Museum, Washington, D. C. (54). K

Heath, Harry E., care Gen'l Electric Co., Lynn, Mass. (50). D

Hebbard, Ellery Cola, M. D., 122 Huntington Ave., Boston, Mass. (51). K

*Hedgcock, George Grant, Lab. Forest Pathology, Bur. of Plant Industry, Washington, D. C. (50). 1903. G

Hedge, Frederic H., 440 Boylston St., Brookline, Mass. (28). F H

*Hedrick, Earle Raymond, Prof. of Mathematics, Univ. of Missouri, Columbia, Mo. (58). 1908. A

Hedrick, Henry B., Nautical Almanac Office, U. S. Naval Observatory, Washington, D. C. (40). 1896. A

Heike, Chas. Rudolph, 117 Wall St., New York, N. Y. (57).

Heimann, Julius, 315 West 105th St., New York, N. Y. (57).

Heinemann, Paul Gustav, Asst. in Bacteriology, Univ. of Chicago, Chicago, Ill. (58).

Heiney, William M., 10 Elm St., Huntington, Indiana. (58).

Heinze, Arthur P., 220 Madison Ave., New York, N. Y. (57).

Heisler, Chas. L., M. E., 211 N. Ash St., St. Mary's, Ohio. (51). D

*Hektoen, Ludvig, Professor of Pathology, University of Chicago, Chicago, Ill. (52). 1906. K

Hellebrandt, F. J., 1092 S. Albany Ave., Chicago, Ill. (58).

Hellick, Chauncey Graham, Ph. D., Dept. Electrical Engineering, Lafayette College, Easton, Pa. (50). B D

*Hemmeter, John C., M. D., Prof. of Physiology, Univ. of Maryland, 1734 Linden Ave., Baltimore, Md. (51). 1906. K

*Henchman, Miss Annie Parker, 8 Frisbie Place, Cambridge, Mass. (54). 1906. F

*Henderson, Junius, Curator of the Museum, Univ. of Colorado, Boulder, Colo. (50). 1906. F

Henderson, Royal L., 242 Lefferts Ave., Richmond Hill, N. Y. (57).

*Henderson, William Edward, Ph. D., Associate Prof. Chemistry, Ohio State University, Columbus, Ohio. (50). 1901. C

*Henderson, Yandell, 400 Prospect St., New Haven, Conn. (57). 1908. K

Hendrick, Ellwood, 139 East 40th St., New York, N. Y. (57).

Henius, Max, Ph. D., 327 Fullerton Ave., Chicago, Ill. (52). K

*Henmon, Vivian A. C., Univ. of Colorado, Boulder, Colo. (54). 1906. H K

Hennen, Ray Vernon, C. E., P. O. Box 386, Morgantown, W. Va. (50). D

Henning, Gus C., 521 W. 142d St., New York, N. Y. (57).

Henrich, Carl, Mining Engineer, Metasville, Ga. (50). A E I

*Henry, Alfred J., Professor of Meteorology, U. S. Weather Bureau, Washington, D. C. (49). 1901. B

Henry, Charles C., M. D., 56 Clark St., Brooklyn, N. Y. (43).

Henry, Stewart L., 908 S. Carrollton Ave., Station B., New Orleans, La. (55).

Hensel, Samuel Theodore, Ph. G., P. O. Box 14, Capitol Hill Station, Denver, Colo. (50). C G

Henshaw, Henry W., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. (55). F H

Henszey, Sam'l Alexander, P. O. Box 1277, New York, N. Y. (51).

Herbert, Arthur P., Supt. Mexican Pacific Rwy. Co., Colima, Colima, Mex. (51). D

*Hering, Daniel Webster, Professor of Physics, New York University, University Heights, New York, N. Y. (50). 1906. B D

*Hering, Rudolph, 170 Broadway, New York, N. Y. (33). 1885. D E I

Hermann, Ferdinand, 20 East 80th St., New York, N. Y. (57).

Herms, Wm. B., 23 Ware St., Cambridge, Mass. (57). F

Herr, Hiero B., Monadnock Block, Chicago, Ill. (50) E

*Herrick, C. Judson, Hull Lab. of Anatomy, Univ. of Chicago, Chicago, Ill. (49). 1901. F

*Herrick, Francis Hobart, Ph. D., Professor Biology, Adelbert College, Western Reserve Univ., Cleveland, Ohio. (52). 1905. F

Herrick, Glenn W., Professor of Biology, A. and M. College, Agricultural College, Miss. (50). F

Herrick, Rev. Jos. C., St. Joseph Seminary, Yonkers, N. Y. (56).

HERRMAN, MRS. ESTHER, 59 West 56th St., New York, N. Y. (29).

*Herrmann, Richard, 2419 Conler Ave., Dubuque, Iowa. (50). 1902. **C E**

Herron, William Harrison, U. S. Geological Survey, Washington, D. C. (52). **D E I**

*Herter, Christian A., M. D., 819 Madison Ave., New York, N. Y. (50). 1902. **K**

*Herty, Charles Holmes, Ph D., University of North Carolina, Chapel Hill, N. C. (42). 1895. **C**

Hertzog, P. H., Assistant to State Zoologist, Harrisburg, Pa. (57). **F**

*Hervey, Rev. A. B., Bath, Me. (22). 1879. **F**

Herzog, Felix Benedict, Ph. D., President Herzog Teleseme Co. 137 W. 23d St., New York, N. Y. (50). **D**

Herzog, Maximilian, care of Michael Reese Hospital, 29th and Groveland Park Ave., Chicago, Ill. (58). **H K**

Herzstein, M., M. D., 1404 Sutter St., San Francisco, Cal. (52). **K**

Hess, Selmar, Publisher, 956 Madison Ave., New York, N. Y. (53). **I**

Hesse, Conrad E., U. S. Weather Bureau, Washington, D. C. (50). **A**

Hessler, Robert, M. D., Logansport, Ind. (54). **F K**

Hewett, Edgar L., 1333 F St., N. W., Washington, D. C. (50). **H**

Hewitt, Thomas Edwin, Mining Engineer, Slab Fork Coal Co., Lester, W. Va. (56). **C**

HEXAMER, C. JOHN, C. E., 419 Walnut St., Philadelphia, Pa. (33). **B C**

Heyer, Wm. D., Box 94, Elizabeth, N. J. (33). **B D**

Heyl, Paul Renno, Instructor in Physics, Central High School, Philadelphia, Pa. (54). **B**

Hibbard, Rufus P., Ph. D., Station Bacteriologist and Pathologist, Agricultural College, Miss. (54).

*Hice, Richard R., Beaver, Pa. (41). 1906. **E**

Hidershide, George N., M. D., Arcadia, Wis. (58).

Higdon, John Clark, 605 Missouri Trust Bldg., St. Louis, Mo. (50), **B D I**

Higdon, John E., Teacher of Mathematics, Shortridge High School, 3949 Charles Ave., Indianapolis, Ind. (54). 1906. **A B D K**

*Higgins, J. Edgar, Box 677, Honolulu, H. I. (57). **G**

Higgins, Lafayette, C. E., Prof. of Chemistry, West D. M. High School, Des Moines, Iowa. (51). **D**

Higginson, James J., 16 E. 41st St., New York, N. Y. (49).

Hildreth, Percy S., 181 West 75th St., New York, N. Y. (57)

*Hilgard, Prof. E. W., Univ. of California, Berkeley, Cal. (11). 1874. **B C E**

Hill, A. Ross, Dean of Coll. of Arts and Sciences, Cornell Univ., Ithaca, N. Y. (58). **L**

*Hill, Eben Clayton, Johns Hopkins University, Baltimore, Md. (54). 1906. **K**

Hill, Edwin A., Assistant Examiner, U. S. Patent Office, Washington, D. C. (52). **D**

*Hill, John Edward, Prof. of Civil Engineering, Brown University, Providence, R. I. (44). 1897. **D**

*Hill, Robert Thomas, Trinity Bldg., New York, N. Y. (36). 1889. **E**

Hill, Wm. K., Carthage College, Carthage, Ill. (54). **G**

*Hillebrand, William F., U. S. Geological Survey, Washington, D. C. (51). 1903. **C**

Hillig, Frederick J., S. J., St. Johns College, Toledo, Ohio. (50). **B**

Hills, Alfred Kimbal, M. D., 541 West End Ave., New York, N. Y. (57). **K**

*Hilprecht, Prof. H. V., 807 Spruce St., Philadelphia, Pa. (54). 1906.

*Hilton, William A., Pomona College, Claremont, Cal. (49). 1906. **F**

*Himes, Prof. Charles F., Carlisle, Pa. (29). 1882. **B C**

*Himowich, Adolph A., M. D., 130 Henry St., New York, N. Y. (51). 1906. **K**

Hinchman, Mrs. Lydia S., 3635 Chestnut St., Philadelphia, Pa. (57).

Hinds, Frank Allen, Watertown, Jefferson Co., N. Y. (57). **D E**

*Hinds, J. I. D., Ph. D., University of Nashville, Nashville, Tenn. (55). 1908. **C**

*Hinds, W. E., Prof. of Entomology and Entomologist to the Exper. Station, Alabama Polytechnic Institute, Auburn, Ala. (54). 1906. **F**

Hindshaw, Henry Havelock, Assistant in Geology, State Museum, Albany, N. Y. (52). **E**

*Hine, James S., Ohio State Univ., Columbus, Ohio. (48). 1903. **F**

Hinkins, J. E., 131 East 53d St., Chicago, Ill. (58).

Hinman, Edgar Lenderson, Assoc. Prof. of Philosophy, Univ. of Nebraska, Lincoln, Neb. (54). **F**

*Hinrichs, Dr. Gustavus, 4106 Shenandoah Ave., St. Louis, Mo. (17). 1874. **B C**

Hinsdale, Wilbert B., M. D., Univ. of Michigan, Ann Arbor, Mich. (54). **K**

Hirsche, Andrew J., Rector Bldg., Chicago, Ill. (58).

Hirschfelder, Jos. Oakland, M. D., Professor of Cl. Med., Cooper Medical College, 1392 Geary St., San Francisco, Cal. (51). **K**

Hirshfeld, Clarence Floyd, Asst. Prof. Steam Engineering, Cornell University, Ithaca, N. Y. (54).

*Hiss, P. Hanson, M. D., 437 West 59th St., New York, N. Y (49). 1903. F K
*Hitchcock, Albert Spear, Div. Agrostology, U. S. Dept. Agriculture, Washington, D. C. (39). 1892. G
Hitchcock, Miss Caroline Judson, Teacher in High School, Meriden, Conn. (50). B E
*HITCHCOCK, CHARLES H., LL. D., Hanover, N. H. (11). 1874. E
*Hitchcock, Miss Fanny R. M., 4038 Walnut St., Philadelphia, Pa. (35). 1906. F
*Hitchcock, Frank H., First Assistant Postmaster-General, Washington, D. C. (49). 1901. I
*Hitchcock, Romyn, P. O. Box 1765, New York, N. Y. (47). 1898. B C
Hitchens, Arthur Parker, M. D., Bacteriologist, Glenolden, Pa. (58). K
Hitzrot, James Morley, M. D., 126 East 37th St., New York, N. Y. (57). K
Hoad, W. C., Associate Professor Civil Engineering, Univ. of Kansas, Lawrence, Kans. (54). D
*Hoadley, George A , Swarthmore College, Swarthmore, Pa. (40). 1900. B
Hoagland, Ralph, 321 W. 72d St., Chicago, Ill. (53). C
Hobbs, Prof. Perry L., Western Reserve Medical College, Cleveland, Ohio. (41). C
*Hobbs, William Herbert, Ph. D., Univ. of Michigan, Ann Arbor, Mich. (41). 1893. E
Hobby, C. M., M. D., Iowa City, Iowa. (51). K
Hobson, Hon. Richmond Pearson, 2117 S St. N. W., Washington, D. C. (54).
Hodge, Clifton F., Prof. of Biology, Clark Univ., Worcester, Mass. (58).
*Hodge, Frederick Humbert, Instructor in Mathematics, Clark University, Worcester, Mass. (50). 1908. A
*Hodge, Frederick Webb, Smithsonian Institution, Washington, D. C. (52). 1903.
Hodge, James M., Big Stone Gap, Va. (29). D E
Hodges, Robert Shattuck, Chemist Ala. Geological Survey, University, Ala. (54). C E
*Hodgkins, Prof. H. L., George Washington University, Washington, D. C. (40). 1896. A B
Hodgkins, William Candler, Coast and Geodetic Survey, Washington, D. C. (52). D
HOE, MRS. R., JR., 11 E. 36th St., New York, N. Y. (36).
Hoe, Mrs. Richard M., 11 E. 71st St., New York, N. Y. (36).
Hoff, Olaf C. E., 1170 Broadway, New York, N. Y. (57).
Hoffman, Conrad, Experiment Station, University of Wis., Madison, Wis. (57). K

Hoffman, Frank Sargent, Professor of Philosophy, Union University, Schenectady, N. Y. (52). 1906. H

*HOFFMANN, DR. FRIEDRICH, Charlottenburg, Kant St. 125, Berlin, Germany (28). 1881. C F

Hoffman, Geo. Edgar, "Longcliff," Logansport, Ind. (57). K

*Hoffman, Samuel V., Morristown, N. J. (52). 1906. A D

Hogan, Edgar Poe, Professor of Chemistry and Biology, Howard College, East Lake, Ala. (54). C F

Hogan, Mrs. Louise E., 438 West 116th St., New York, N. Y. (52).

Hogeboom, Miss Ellen C., 210 Augusta St., San Antonio, Texas. (46). C

Holbrook, Percy, 29 West 34th St., New York, N. Y. (51). D

Holden, Edwin R., 13 E. 79th St., New York, N. Y. (49).

*HOLDEN, MRS. L. E. The Hollenden, Cleveland, Ohio. (35).

*Holferty, George M., Ph D., Instructor in Botany, Central High School, St. Louis, Mo. (50). 1905. G

*Holland, W. J., D. D., LL. D., Director Carnegie Museum, Pittsburg, Pa. (37). 1896. F

Holland, William West, Ph. D., 1122 Madison Ave., Baltimore, Md. (58). C

*Hollick, Arthur, N. Y. Botanical Garden, Bronx Park, New York, N. Y. (31). 1892. E G

Hollinshead, Warren H., Vanderbilt University Laboratory, Nashville, Tenn. (37).

Hollister, Frank, M. D., 264 West 77th St., New York, N.Y. (57). K

Hollister, N., U. S. Dept. Agriculture, Washington, D. C. (57). F

Holman, R. Morris, Assistant in Botany, Box 1294, Stanford University, California. (55). G

Holmes, A. M., M. D., 1430 First Nat'l Bank Bldg., Chicago, Ill. (50). F K

*Holmes, Prof. Joseph A., 2137 Le Roy Place, Washington, D. C. (33). 1887. E F

Holmes, Manfred James, Prof. of Psychology, Normal, Ill. (58). L

Holmes, Miss Mary S., 1331 N. Twelfth St., Philadelphia, Pa. (50). E

*Holmes, S. J., Ph. D., University of Wisconsin, Madison, Wis. (51). 1903. F

*Holmes, Wm. H., Bureau of American Ethnology, Washington, D. C. (30). 1883. H

Holstein, George Wolf, Hamby, Texas. (28). E H

Holt, Erastus Eugene, M. D., 723 Congress St., Portland, Me. (54). K

*Holt, Henry, 29 W. 23d St., New York, N. Y. (29). 1908. I

Holton, Henry D., M. D., Brattleboro, Vt. (44). I

Holton, Nina G., U. S. Dept. Agriculture, Washington, D. C. (57).
Holzinger, John M., 207 West King St., Winona, Minn. (54). G
Homburg, Frederick, Teacher of Chemistry, Woodward High School, Cincinnati, Ohio. (51). C
Homer, Charles S., of Valentine & Co., 257 Broadway, New York, N. Y. (29).
*Hood, Ozni P., Professor of Mechanical and Electrical Engineering, School of Mines, Houghton, Mich. (51). 1906. D E
Hood, William, Room 1136, James Flood Bldg., San Francisco, Cal. (35). D
Hooker, Davenport, Yale University, New Haven, Conn. (52). F
*Hooker, Donald R., Chemist, 1707 Fairmount Ave., Baltimore, Md. (50). 1907. C F K
Hooker, Henrietta E., Ph. D., Professor of Botany, Mt. Holyoke College, South Hadley, Mass. (45). G
Hooker, John D., 325 West Adams St., Los Angeles, Cal. (51). A
Hooker, William A., U. S. Dept. of Agriculture, Washington, D. C. (54). F
Hooper, Everett, M. D., Ph. D., Warren Chambers, Boston, Mass. (57). C K
Hooper, Prof. Franklin W., Curator, Brooklyn Institute, Brooklyn, N. Y. (43).
Hoopes, H. E., Media, Pa. (52). H
Hoose, James H., Ph. D., Professor of Philosophy, Univ. of Southern California, Los Angeles, Cal. (52). I
Hoover, Herbert C., 62 London Wall, London, England. (51). E
Hoover, Mrs. Lou Henry, 62 London Wall, London, England. (51). E
Hopeman, H., M. D., Minden, Neb. (51). G
*Hopkins, A. D., Ph. D., U. S. Department Agriculture, Washington, D. C. (42). 1899. F
Hopkins, Albert Lloyd, 2904 West Ave., Newport News, Va. (51).
Hopkins, Anderson Hoyt, Librarian Carnegie Library, Pittsburg, Pa. (52).
*Hopkins, Prof. Arthur John, Amherst College, Amherst, Mass. (44). 1900. C
Hopkins, Cyril G., Chief in Agronomy and Chemistry, Univ. of Illinois, Agriculture Exp. Station, 1001 So. Wright St., Champaign, Ill. (57). C
Hopkins, George B., 52 Broadway, New York, N. Y. (50).
*Hopkins, Grant S., Cornell University, Ithaca, N. Y. (41). 1900. F
Hopkins, Louis J., Winnetka, Ill. (58).
*Hopkins, Nevil Monroe, Asst. Professor of Chemistry, George Washington University, Washington, D. C. (48). 1901. C D

Hopkins, Rupert Henry, College Ave., Westerleigh, West New Brighton, N. Y. (54). C

Hopkins, Samuel Augustus, M. D., 235 Marlboro St., Boston, Mass. (54). K

*Hopkins, Thomas Cramer, Syracuse University, Syracuse, N. Y. (38). 1898. E

Hormell, Prof. William G., Ohio Wesleyan Univ., Delaware. Ohio. (48). B

Hornung, Christian, Professor of Mathematics and Astronomy, Heidelberg University, Tiffin, Ohio. (50). A D

*Horsford, Miss Cornelia, 27 Craigie St., Cambridge, Mass. (46). 1897. H

Horton, Byron Barnes, Sheffield, Pa. (54). F G

*Hortvet, Julius, State Chemist, Old Capitol, St. Paul, Minn (50). 1906. C

*Hoskins, Leander Miller, Professor of Applied Mathematics, Stanford University, Cal. (54). 1906. A

*Hoskins, William, 49 Sixth Ave., La Grange, Ill. (34). 1903. C

Hosmer, Geo. Washington, M. D., 7 East 73d St., New York, N. Y. (57). K

Hosmer, Sidney, E. E., Boston Electric Light Co., 3 Head Place, Boston, Mass. (50). D

Hotchkiss, Henry D., 5 Nassau St., New York, N. Y. (57).

*Hotchkiss, Homer J., Professor of Physics, Drexel Institute, 5044 Cedar Ave., Philadelphia, Pa. (54). 1906. B

Hotchkiss, Lucius Wales, M. D., 59 West 48th St., New York, N. Y. (57). K

Hotchkiss, William Otis, Wisc. Geol. and Nat'l Hist. Survey, Madison, Wis. (58). E

Hottenroth, Fred'k W., 981 Prospect Ave., Bronx, New York, N. Y. (57).

Hottes, Charles Frederick, Asst. Prof. of Botany, Univ. of Illinois, Urbana, Ill. (54). G

*Hough, Prof. G. W., Northwestern University, Evanston, Ill. (15). 1874. A B D

*Hough, Theodore, Ph. D., Univ. of Virginia, Charlottesville, Va. (51). 1903. K

*Hough, Walter, U. S. National Museum, Washington, D C. (38). 1890.

*Houghton, E. Mark, 130 Longfellow Ave., Detroit, Mich. (52). 1906. K

*Houser, Gilbert L., Ph. D., Professor Animal Biology, State University of Iowa, Iowa City, Iowa. (50). 1906. F K

*Hovey, Edmund O., Amer. Mus. Nat. History, Central Park, New York, N. Y. (36). 1895. C E

*Hovey, Rev. Horace Carter, 60 High St., Newburyport, Mass. (29). 1883. E H

Howard, Arthur Day, Ph. D., Westminster College, New Wilmington, Pa. (57). F

Howard, Charles P., 116 Farmington Ave., Hartford, Conn. (51).

*Howard, Prof. Curtis C., 97 Jefferson Ave., Columbus, Ohio. (38). 1892. C

Howard, Harry Turner, 3513 St. Charles Ave., New Orleans, La. (55).

*Howard, Henry, 36 Amory St., Brookline, Mass. (57). 1908. C

Howard, Kenneth Samuel, 377 Grand Ave., Rochester, N. Y. (55). C E

*Howard, Leland O., Ph. D., Cosmos Club, Washington, D. C. (37). 1889. F

Howard, Mrs. Leland O., 2026 Hillyer Place, N.W., Washington, D. C. (49). H

Howard, Orson, M. D., Curator of Museum, University of Utah, Salt Lake City, Utah. (50). F K

*Howard, S. Francis, Professor of Chemistry, Mass. Agricultural College, Amherst, Mass. (50). 1901. C

Howard, Wm. Coleman, 246 Washington Ave., Brooklyn, N. Y. (57).

*Howard, William Travis, Jr., Prof. of Pathology, Western Reserve University, Cleveland, O. (54). 1906. K

Howat, William Frederick, M. D., Hammond, Ind. (58). K

*Howe, Charles S., President Case School of Applied Science, Cleveland, Ohio. (34). 1891. A

Howe, Clifton D., Ph. D., Instructor in Botany, Biltmore Forrest School, Biltmore, N. C. (57). G

*Howe, Ernest, Ph. D., U. S. Geological Survey, Washington, D. C. (52). 1906. E

Howe, Eugene C., B. A., 32 Gardiner St., Allston, Mass. (57).

Howe, Frederic W., Instr. in Chemistry, State Normal School, Framingham, Mass. (58). C

Howe, Freeland, Jr., Chemist and Bacteriologist, Norway, Maine. (53). F G

*Howe, Henry M., Professor of Metallurgy, Columbia University, New York, N. Y. (50). 1901. D

*Howe, Herbert Alonzo, Director of the Chamberlin Observatory, University of Denver, University Park, Colo. (50). 1901. A

*Howe, Prof. Jas. Lewis, Washington and Lee University, Lexington, Va. (36). 1888. C

Howe, J. Morgan, M. D., 12 West 46th St., New York, N. Y. (50).

*Howe, Marshall A., New York Botanical Garden, Bronx Park, New York, N. Y. (49). 1903. G

*Howell, Edwin E., 612 17th St., N.W., Washington, D. C. (25). 1891. E

Howell, John W., Ballantine Parkway, Newark, N. J. (50).

*Howell, William H., M. D., Ph. D., Professor of Physiology, Johns Hopkins University, Baltimore, Md. (50). 1901. F K

*Howison, George Holmes, LL. D., Mills Professor of Philosophy, Univ. of California, Berkeley, Cal. (54). 1908. A

Howland, Randolph H., 164 Wildwood Ave., Upper Monclair, N. J. (54). F

*Hoxton, Llewellyn Griffith, University of Virginia, Charlottesville, Va. (54). 1906. B

Hoyt, Olive Sawyer, Kobe College, Kobe, Japan. (52). C

*Hrdlicka, Alës, M. D., U. S. National Museum, Washington, D. C. (46). 1897. H

Hubbard, Geo. D., Asst. Prof. Geology, Ohio State Univ., Columbus, Ohio. (55). E

Hubbard, Miss Marian E., Asso. Prof. of Zoology, Wellesley College, Wellesley, Mass. (58). F

Hubbard, Walter C., Coffee Exchange Bldg., New York, N. Y. (49).

Hubbell, H. S., Ashburnham, Mass. (57). D

*Huber, G. Carl, M. D., Professor of Histology and Embryology and Director of Histological Laboratory, University of Michigan, Ann Arbor, Mich. (50). 1901. F K

*Huddleston, John H., M. D., 126 West 85th St., New York, N. Y. (51). 1906. K

Hudson, Erastus Meade, 19 Broad St., Plattsburg, Clinton Co., N. Y. (57). F

*Hudson, George H., Vice Principal, Science Department State Normal School, Plattsburgh, N. Y. (31). 1901. F

Hudson, James A., Att'y and Counsellor-at-Law, Aldrich Court, New York, N. Y. (57).

Hughes, Francis T., Teacher of Biology, Boys' High School, Brooklyn, N. Y. (58). F G L

Hughes, Percy, Ph. D., Dept. of Philosophy and Psychology, Lehigh Univ., So. Bethlehem, Pa. (58). K

Hughes, Richard C., President of Ripon College, Ripon, Wis. (58).

*Hughes, R. M., Prof. of Chemistry, Miami University, Oxford, Ohio. (57). 1908. C

*Hull, Gordon Ferrie, Professor of Physics, Dartmouth College, Hanover, N. H. (50). 1903. B

Hume, Alfred, C. E., University, Miss. (39). A

Hummel, John A., Experiment Station, St. Anthony Park, Minn. (48).

Humphrey, Harry Baker, 204 Santa Rosa Ave., Santa Rosa, Cal. (55). G

*Humphrey, Richard L., Testing Laboratory, City Hall, Philadelphia, Pa. (48). 1902. D

Humphreys, Alex. C., M. E., C. E., 31 Nassau St., New York, N. Y. 1907. (49).

Humphreys, David Carlisle, C. E., Professor of Civil Engineering, Washington and Lee University, Lexington, Va. (53). D

Humphreys, Fred'k B., M. D., 78 West 85th St., New York, N. Y. (57). K

*Humphreys, W. J., Mount Weather, via Bluemont, Va. (54). 1906. A

Hunt, Arthur E., Teacher of Biology, Manual Training High School, Brooklyn, N. Y. (54). F

Hunt, Caroline L., In charge Department Home Economics, Univ. of Wisconsin, Madison, Wis. (54). C

Hunt, Chas. Wallace, Stapleton, N. Y. (51).

Hunt, Fred. F., Mining Engineer, 77 Pine St., New York, N. Y. (57). E

Hunt, Walter F., Instructor in Mineralogy, University of Michigan, Ann Arbor, Mich. (57). C E

*Hunter, Andrew Frederick, Barrie, Ontario, Can. (38). 1896. B H I

Hunter, George William, 2238 Andrews Ave., University Heights, New York, N. Y. (51). F

*Hunter, Prof. J. Rufus, Raleigh, N. C. (45). 1899. C

*Hunter, Samuel John, Associate Professor of Entomology, University of Kansas, Lawrence, Kansas. (50). 1902. F

*Hunter, Walter David, U. S. Department Agriculture, Washington, D. C. (50). 1905. F

HUNTINGTON, ARCHER M., Hispanic Society of America, 156th St., near Broadway, New York, N. Y. (57).

*Huntington, Edward V., Asst. Prof. of Mathematics, Harvard Univ., Cambridge, Mass. (58). 1908. A

Huntington, Ellsworth, Yale University, New Haven, Conn. (51)

*Huntington, Prof. G. S., Columbia University, New York, N. Y. (52). 1906. F

Huntoon, Louis Doremus, Asst. Prof. Mining and Metallurgy, Sheffield Scientific School, Yale Univ., New Haven, Conn. (55). D

Hurd, E. O., Plainville, Ohio. (30). E F

Hurlbut, Frank M., 20 Union Square, New York, N. Y. (57).

Hurst, Julius H., M. D., Box 13, Montecito, Cal. (52). K

Hurty, John N., M. D., 17 East 11th St., Indianapolis, Ind. (58). K

Huss, Frederick A., M. D., 247 East Division St., Chicago, Ill. (58). K

Hussakof, Dr. Louis, American Museum of Natural History, 77th St. and Central Park West, New York, N. Y. (56). F

Huston, Henry A., 562 Monadnock Block, Chicago, Ill. (53). **C**
Hutcheson, David, P. O. Box H, East Capitol St., Washington, D. C. (52). **H I**
Hutchins, Edgar Burton, Jr., Ph. D., Prof. Chemistry, Carroll College, 205 McCall St., Waukesha, Wis. (57). **C**
Hutchinson, Emilie J., 287 Caroll St., Brooklyn, N. Y. (57). **I**
Hutchinson, Woods, A. M., M. D., 38 East 49th St., New York, N. Y. (56). **K**
Hyams, Miss Isabel F., 26 Wales St., Dorchester, Mass. (47). **C**
Hyde, Abraham Lincoln, Asst. Prof. Civil Engineering, Univ. of Missouri, University Club, Columbia, Mo. (54). **D**
Hyde, B. T. Babbitt, 20 W. 53d St. New York, N. Y. (43). **D**
Hyde, Miss Edith E., 1840 Summit Ave., Lanier Heights, Washington, D. C. (50). **H I**
Hyde, E. Francis, 36 W. 58th St., New York, N. Y. (43). **A**
*Hyde, Miss Elizabeth Mead, 210 E. 18th St., New York, N. Y. (49). 1906. **H**
*Hyde, Prof. E. W., Station D, Cincinnati, Ohio. (25). 1881. **A**
Hyde, Frederick E., M. D., 11 W. 52d St., New York, N. Y. (43). **E K**
Hyde, Frederick E., Jr., 542 Fifth Ave., New York, N. Y. (43). **H**
Hyde, Henry St. J., 210 E. 18th St:, New York, N. Y. (49).
Hyde, Jesse E., 163 King St., Lancaster, Ohio. (57). **E**
*Hyde, John, 1840 Summit Ave., Lanier Heights, Washington, D. C. (47). 1898. **E I**
Hyslop, James Hervey, Ph.D., LL.D., 519 West 149th St., New York, N. Y. (56). **I**
Hyslop, John, 4 Riverview Terrace, New York, N. Y. (57).
*Iddings, Joseph P., Univ. of Chicago, Chicago, Ill. (31). 1884. **E**
Iden, Thomas M., Professor of Chemistry and Physics, State Normal School, Emporia, Kansas. (50). **B C F**
*Iles, George, 5 Brunswick St., Montreal, Can. (31). 1898. **I**
Illoway, Henry, M. D., 1113 Madison Ave., New York, N. Y. (57). **K**
Ingham, Wm. A., 320 Walnut St., Philadelphia, Pa. (33). **E**
Ingraham, Geo. L., 80 Irving Place, New York, N. Y. (57).
Ingram, Edward Lovering, C. E., University of Pennsylvania, Philadelphia, Pa. (51). **A B C D**
Iorns, Martin J., Government Experiment Station, Mayaguez, Porto Rico. (50). **C G**
*Irving, John Duer, South Bethlehem, Pa. (51). 1903. **E**
Irving, Mrs. Rosina J. Rennert, 366 West 120th St., New York, N. Y. (57).
Isaacs, Miss Alice M., 110 East 73d St., New York, N. Y. (58).

*Isham, George Snow, M. D., 488 N. State St., Chicago, Ill. (54). 1906. A K

*Ives, Frederick E., Woodcliff-on-Hudson, Weehawken, N. J. (44.) 1898. B

Jaches, Leopo W., Loomis Lab., Cornell University Medical College, 414 E. 26th St., New York, N. Y. (57). K

*Jack, John G., 117 Forest Hill St., Jamaica Plain, Mass. (31). 1890. G

*Jackson, Abraham Wendell, care of L. S. Jackson, 9 Desbrosses St., New York, N. Y. (54). 1906. E

*Jackson, Prof. Charles L., Harvard University, Cambridge, Mass. (44). 1895. C

*Jackson, Holmes Condict, Ph. D., 997 Madison Ave., Albany, N. Y. (57). 1908. K

Jackson, John H., M. D., 155 Franklin St., Fall River, Mass. (51). K

*Jackson, Dr. Robert T., 9 Fayerweather St., Cambridge, Mass. (37). 1890. F

Jackson, Victor H., M. D., 240 Lenox Ave., New York, N. Y. (51). K

Jacobi, A., 19 East 47th St., New York, N. Y. (57).

Jacobs, Henry Barton, M. D., Instructor in Medicine, Johns Hopkins Medical School, Baltimore, Md. (50). F K

*Jacobs, J. Warren, 404 So. Washington St., Waynesburg, Pa. (54) 1906. F

Jacobs, Michael William, 222 Market St., Harrisburg, Pa. (50). I

*Jacobus, David S., care of Babcock and Wilcox Co., 85 Liberty St., New York, N. Y. (36). 1889. A B D

*Jacoby, Harold, Columbia University, New York, N. Y. (38). 1891. A

*Jacoby, Henry S., Professor of Bridge Engineering, Cornell University, Ithaca, N. Y. (36). 1892. D

James, Charles C., Dept. Agriculture, Toronto, Can. (46). I

James, George Francis, Dean, Coll. of Education, Univ. of Minn., 308 18th Ave. S. E., Minneapolis, Minn. (58). L

James, Mrs. Sarah S., 1517 O St., N.W., Washington, D. C. (49). H I

*James, Walter Belknap, M. D., 17 West 54th St., New York, N. Y. (54). 1906. K

*James, William, Professor of Philosophy, Harvard University, Cambridge, Mass. (52). 1903. I

Janeway, E. G., 36 West 40th St., New York, N. Y. (57).

*Jacques, Capt. William Henry, Little Boars Head, New Hampshire. (47). 1899. D

Jarman, Joseph L., President and Prof. of Chemistry, State Female Normal School, Farmville, Va. (51). C

*Jastrow, Dr. Joseph, Univ. of Wisconsin, Madison, Wis. (35). 1887. F H

Jayne, Harry W., Elkins Park, Pa. (54). C

*Jayne, Horace, 318 S. 19th St., Philadelphia, Pa. (29). 1884. F H

Jeans, Prof. J. H., F. R. S., Princeton, N. J. (57).

Jefferson, J. P., Manufacturer, Warren, Pa. (51). D I

*Jefferson, Mark S. W., Professor of Geology, State Normal College, Ypsilanti, Mich. (52). 1906. E

*Jeffrey, Edward Charles, Ph. D., 47 Lakeview Ave., Cambridge, Mass. (52). 1905. G

*Jeffries, B. Joy, M. D., 15 Chestnut St., Boston, Mass. (29). 1881. F H

Jelly, George Frederick, M. D., 69 Newbury St., Boston, Mass. (50). F K

*Jenkins, Edw. H., Agricultural Station, New Haven, Conn. (33). 1885. C

Jenkins, J. F., M. D., 48 Chicago St., Tecumseh, Mich. (50). K

Jenkins, Lawrence W., Curator of Ethnology, Peabody Museum, Salem, Mass. (57). H

*Jenkins, Oliver Peebles, Professor of Physiology, Stanford University, Cal. (52). 1905. F K

*Jenks, Albert Ernest, University of Minnesota, Minneapolis, Minn. (50). 1902. H

*Jenks, Elisha T., Middleboro, Mass. (22). 1874. D

Jenks, Wm. H., Brookville, Pa. (38).

Jenks, William Johnson, Electrical Engineer, 120 Broadway, New York, N. Y. (50). B D

*Jenney, Walter Proctor, E. M., Ph. D., Box 696, Tonopah, Nev. (50). 1903. E

Jennings, Annie B., 48 Park Ave., New York, N. Y. (57).

Jennings, Fred Huntington, 9 Pleasant St., Watertown, N. Y. (57). C

Jennings, Gainor, M. D., West Milton, Ohio. (51). K

*Jennings, H. S., Associate Prof. of Zoölogy, Johns Hopkins University, Baltimore, Md. (54). 1908. F

Jennings, Otto Emery, Carnegie Museum, Pittsburg, Pa. (53). G

*Jennings, Walter L., Worcester Polytechnic Institute, Worcester, Mass. (45). 1898.

Jensen, Chas. A., U. S. Department of Agriculture, Washington, D. C. (54). G

Jensen, Jens, 604 N. Sacramento Ave., Chicago, Ill. (58).

Jessen, Karl Detlev, Ph. D., Bryn Mawr College, Bryn Mawr, Pa. (55). H

*Jewell, Lewis E., Johns Hopkins University, Baltimore, Md. (49). 1906. A

Jewell, William M., Park Ridge, Ill. (58).

*Jewett, Prof. Frank Fanning, Oberlin College, Oberlin, Ohio. (47). 1899. C

Jewett, William Cornell, C. E., 541 Ridgeway Ave., Avondale, Cincinnati, Ohio. (52). D

*Job, Robert, Chemist P. & R. Ry., 109 Windsor St., Reading, Pa. (54). 1908. C

*Joffe, S. A., Mutual Life Insurance Co., of N. Y., 55 Cedar St., New York, N. Y. (54). 1906. A

Johannsen, Albert, Ph. D., U. S. Geological Survey, Washington, D. C (54). E

Johannsen, Oskar Augustus, Asst.. Prof. Civil Engineering, Cornell Univ., Ithaca, N. Y. (54). D

Johns, Carl, Ph. D., Instr. in Chemistry, Yale Univ., New Haven, Conn. (50). C

Johnson, Alba B., Rosemont, Pa. (54).

Johnson, Albert Lincoln, C. E., 925 Frisco Bldg., St. Louis, Mo. (51). D

*Johnson, Chas. Willison, Boston Scciety of Natural History, Boston, Mass. (51). 1908. F

Johnson, Douglas Wilson, Instructor in Geology, Mass. Inst. of Technology, Boston, Mass. (54). E

*Johnson, Duncan S., Ph. D., Professor of Botany, Johns Hopkins University, Baltimore, Md. (54). 1906. G

Johnson, Frank Seward, M. D., 2521 Prairie Ave., Chicago, Ill. (51). K

*Johnson, Herbert Parlin, 242 Tremont St., Melrose Highlands, Mass. (54). 1906 K

Johnson, Hy. W., 90 W. Broadway, New York, N. Y. (57).

Johnson, Miss Isabel Louise, 467 Mass. Ave., Station A, Boston, Mass. (47). E

Johnson, John W., Prof. of Physics, Univ. of Mississippi, University, Miss. (55). B

*Johnson, Otis C., 730 Thayer St., Ann Arbor, Mich. (34). 1886. C

Johnson, Thomas Carskadon, Va. Truck Exper. Sta., Norfolk, Va. (51). G

Johnson. W. Smythe, Ph. D., Univ. of Arkansas, Fayetteville, Ark. (49). H

Johnston, Geo. Ben., M. D., 407 E. Grace St., Richmond, Va. (51). K

*Johnston, John Black, University of Minnesota, Minneapolis, Minn. (52). 1903. F

Johnston, Col. Thomas Alexander, Supt. Kemper Military School, Boonville, Mo. (55).

Johnston, Thomas J., 66 Broadway, New York, N. Y. (50). A B D

Johnston, William A., Princess Bay, Borough of Richmond, New York, N. Y. (50). C

*Johonnott, Edwin Sheldon, Ph. D., Associate Professor of Physics, Rose Polytechnic Institute, Terre Haute, Ind. (50). 1903. B

*Jones, A. L., Ph. D., Princeton University, Princeton, N. J. (52). 1905. H I

Jones, Arthur Taber, Instructor in Physics, Purdue University, Lafayette, Ind. (53). B

Jones, Chas. Landon, 63 Wall St., New York, N. Y. (57).

Jones, Charles R., U. S. Dept. Agriculture, Box 208, Dallas, Texas. (55). F

Jones, Clement Ross, Professor Mechanical Engineering, West Virginia University, Morgantown, W. Va. (50). D

Jones, Dwight A., 34 West 51st St., New York, N. Y. (57).

*Jones, Frederick S., Professor of Physics, University of Minnesota, Minneapolis, Minn. (45). 1901. B

Jones, Grinnell, Harvard University, Cambridge, Mass. (52). C

*Jones, Lewis Ralph, Professor of Botany, University of Vermont, Burlington, Vt. (41). 1894. G

*Jones, Lynds, Instructor in Zoology, Oberlin College, Oberlin, Ohio. (50). 1905. F

*Jones, Prof. Marcus E., Salt Lake City, Utah. (40). 1893. G

Jones, Richard Watson, LL. D., Laurel, Miss. (55). C

Jones, Dr. Wm., Field Museum, Natural History, Chicago, Ill. (57). K

*Jordan, David Starr, President of Leland Stanford Jr. University, Stanford University, Cal. (31). 1883. F

*Jordan, Edwin Oakes, Ph. D., University of Chicago, Chicago, Ill. (50). 1901. K

Jordan, H. E., Ph. D., Adj. Prof. Histology and Embryology, Univ. of Virginia, Charlottesville, Va. (57). F

*Jordan, Whitman H., Director N. Y. Agric. Exper. Station, Geneva, N. Y. (45). 1902. I

Juat, Francis, M. D., Aberdeen, N. C. (50). F K

*Judd, Dr. Charles H., Yale University, New Haven, Conn. (49). 1901. H K

Judd, Horace, Asst. Professor of Experimental Engineering, Ohio State University, 281 East 13th Ave., Columbus, Ohio. (56). D

Judson, Champion Hiram, M. D., Dobbs Ferry, West Co., N. Y (57). K

Judson, Harry Pratt, Univ. of Chicago, Chicago, Ill. (58).

Juettner, Dr. Otto, 628 Elm St., Cincinnati, Ohio. (57). K
*Julien, Alexis A., Columbia University, New York, N. Y. (24). 1875. C E
Just, John A., Chemist, 915 W. Genesee St., Syracuse, N. Y. (50). C
Kaadt, Peter S., M. D., Clinton, Ia. (54). K
Kahl, Hugo, Carnegie Museum, Pittsburg, Pa. (50). F
*Kahlenberg, Louis, Ph. D., Professor of Physical Chemistry, Univ. of Wisconsin, Madison, Wis. (46). 1898. C
Kahlo, Geo. Dwight, M. D., French Lick, Ind. (58). K
Kahn, O. H., P. O. Box 1193, New York, N. Y. (57).
Kammerer, Jacob Andrae, 87 Jameson Ave., Toronto, Canada. (50). C D
*Kane, Elisha Kent, Kushequa, Pa. (54). 1906. D
Kane, R. Emmet, A. M., M. D., 312 Humboldt Bldg., St. Louis, Mo. (58). K
Kane, Thos. Franklin, Ph. D., President University of Washington, Seattle, Wash. (55). I
Kaplan, Harry, 4540 Cook Ave., St. Louis, Mo. (57). E
Karsten, A. C., M. D., Horicon, Wis. (58). K
*Kasner, Edward, Ph. D., Tutor in Mathematics, Barnard College, Columbia University, New York, N. Y. (52). 1903. A
Kauffman, William Albert, Baldwin, Long Island, N. Y. (52).
Kaumheimer, G. J., M. D., 786 Third St., Milwaukee, Wis. (58). K
Kavanagh, Thomas J., Supt. American Sugar Refining Co., P. O. Box L, Jersey City, N. J. (56).
Kay, Prof. Geo. Fred'k, Iowa City, Iowa. (57). E
Kay, James I., 1361 Frick Annex, Pittsburg, Pa. (51). D I
Kean, Mrs. Hamilton Fish, 25 East 37th St., New York, N. Y. (50).
*Keane, John J., Rt. Rev., Archbishop of Dubuque, Dubuque, Ia. (51). 1906.
Kearfott, W. D., Montclair, N. J. (54). F
*Kearney, Thomas H., U. S. Dept. Agriculture, Washington, D. C. (47). 1902. G
*Keep, Wm. J., 753 Jefferson Ave., Detroit, Mich. (37). 1897.
Keilholtz, Pierre Otis, Consulting Engineer, Continental Trust Building, Baltimore, Md. (50). D
Keim, Edward Tudor, E. E., Supt. Am. Dist. Tel. Co., 1421 Champa St., Denver, Colo. (50). D E F
Keith, John Meiggs, Manager Costa Rica Div. United Fruit Co., San José, Costa Rica, C. A. (54). G
*Keith, Miss Marcia A., 116 Nassau St., New York, N. Y. (46). 1906. B

Keith, Stanley, care of Keith Bros. & Co., 239 Jackson Blvd., Chicago, Ill. (58).

*Keller, Edward, Ph. D., Box 363, Perth Amboy, New Jersey. (50). 1903. C D

Keller, Emil E., Vice-President, The Westinghouse Machine Co., East Pittsburg, Pa.

Kelley, Walter P., Chemist, Exp. Sta., Lafayette, Ind. (58). C

Kellicott, Wm. E., Prof. of Biology, The Woman's College, Baltimore, Md. (57). F

Kellogg, John H., M. D., Battle Creek, Mich. (24). F

*Kellogg, Vernon Lyman, Professor of Entomology, Leland Stanford Junior Univ., Stanford University, California. (50). 1901. F

Kelley, Edward O. G., Bureau of Entomology, Washington, D. C. (55). F

Kelly, John F., Ph. D., Consulting Electrical Engineer, 284 W. Housatonic St., Pittsfield, Mass. (50). D

Kelly, William, Mining Engineer, General Manager, Penn. Iron Mining Co., Vulcan, Mich. (50). D E

Kelsey, James A., Dunlap, Iowa. (49).

Kelvey, Charles W., Attorney at Law, 49 Wall St., New York, N. Y. (57).

*Kemp, George T., M. D., Ph. D., Professor of Physiology, Univ. of Illinois, Champaign, Ill. (52). 1906. K

*Kemp, James F., School of Mines, Columbia University, New York, N. Y. (36). 1888. E

Kempton, Charles Walter, Mining Engineer, 29 Broadway, New York, N. Y. (54). E

*Kendall, William Converse, Bureau of Fisheries, U. S. Department of Commerce and Labor, Washington, D. C. (52). 1906. F

*Kendrick, Arthur, Electrical Measuring Instruments, 45 Hunnewell Ave., Newton, Mass. (45). 1897. B

Kennedy, Frank Lowell, Instructor in Lawrence Scientific School, Harvard University, Cambridge, Mass. (50).

Kennedy, George Golding, M. D., Readville, Mass. (40). F G

KENNEDY, DR. HARRIS, 286 Warren St., Roxbury, Mass. (40). E F

Kennedy, Mary E., Mt. Holyoke College, South Hadley, Mass. (54). G

*Kennelly, Arthur Edwin, Sc. D., Professor Electrical Engineering, Harvard University, Cambridge, Mass. (50). 1901. B D

Kent, G. H., 1 Broadway, New York, N. Y. (57).

Kent, James Martin, Instructor in Steam and Electricity, Manual Training High School, Kansas City, Mo. (50). D E

*Kent, Norton Adams, Ph. D., Boston University, Boston, Mass. (50). 1906. A

*Kent, William, Professor of Mechanical Engineering, Syracuse University, Syracuse, N. Y. (26). 1881. **D I**

Kenyon, Oscar Curtis, Teacher of Physics, High School, Syracuse, N. Y. (50). **B**

Kenyon, Wm. Houston, 49 Wall St., New York, N. Y. (57).

Keppel, F. P., Secretary of Columbia University, New York, N. Y. (51).

Keppler, Rudolph, 28 W. 70th St., New York, N. Y. (49).

Kern, Frank Dunn, Experiment Station, Lafayette, Ind. (54). **G**

Kern, John H., M. D., 1317 Madison St., St. Louis, Mo. (53). **K**

Kern, Josiah Quincy, Ph. D., 1825 F. St. N. W., Washington, D. C. (40). **I**

*Kerr, Abram Tucker, M. D., Assistant Professor of Anatomy, Cornell University, Ithaca, N Y. (52.) 1906. **K**

*Kerr, William Jasper, D. Sc., President of Agricultural College of Utah, Logan, Utah. (52). 1906. **A**

*Kershner, Prof. Jefferson E., Franklin and Marshall College, Lancaster, Pa. (29). 1883. **A B**

Kesler, John Louis, Department of Biology, Baylor University, Waco, Texas. (51). **F**

*Kester, Fred. Edward, Ohio State University, Columbus, Ohio. (48). 1906. **B**

*Keyser, Cassius Jackson, Ph. D., Prof. of Mathematics, Columbia University, New York, N. Y. (50). 1901. **A**

*Kilgore, Benjamin Wesley, Director North Carolina Experiment Station, Raleigh, N. C. (52). 1906. **C**

*Kimball, Arthur Lalanne, Professor of Physics, Amherst College, Amherst, Mass. (50). 1901. **B**

Kimball, Edwin Boyce, 519 East Lindsay St., Stockton, Cal. (50). **D**

Kimball, Horatio G., Chatham, N J. (57).

Kimball, James H., Observer U. S. Weather Bureau, Milwaukee, Wis. (51). **A B**

Kimball, S. I., Life Saving Service, U. S. Treasury Dept., Washington, D. C. (49). **I**

*Kindle, Edward M., Ph. D., Dept. of the Interior, U. S. Geol. Survey, Washington, D. C. (50). 1908. **E**

*Kinealy, John H., 619 Granite Bldg., St. Louis, Mo. (36). 1891. **D**

*King, A. F. A., M. D., 1315 Mass. Ave. N. W., Washington, D. C. (29). 1900. **F H**

*King, Cyrus A., Ph. D., 661 Flatbush Ave., Brooklyn, N. Y. (50). 1903. **G**

*King, F. H., 1540 University Ave., Madison, Wis. (32). 1892. E F
*King, Helen Dean, Ph. D., Box 93, Bryn Mawr, Pa. (54). 1908. F
*King, W. F., Chief Astronomer, Dept. Interior, Ottawa, Canada. (55). 1908. A
*Kingsbury, Albert, 219 Stratford Ave., Pittsburg, Pa. (43). 1898. D
*Kingsbury, Benj. F., Stimson Hall, Cornell University, Ithaca, N. Y. (45). 1899. F
Kingsbury, Joseph T., Pres. and Prof. of Chemistry, University of Utah, Salt Lake City, Utah. (57). C
*Kingsley, J. Sterling, Tufts College, Mass. (52). 1903. F
Kinner, Hugo, M. D., 1103 Rutger St., St. Louis, Mo. (21). F H
KINNEY, FRANCIS S., The Essex, New York, N. Y. (57).
Kinnicut, Francis P., M. D., 39 East 35th St., New York, N. Y. (57). K
*Kinnicut, Dr. Leonard P., Department of Chemistry, Worcester Polytechnic Inst., Worcester, Mass. (28). 1883. C
KINSEY, OLIVER P., Vice-Pres. Valparaiso Univ., Valparaiso, Ind. (58). I
Kinsler, John H., Dept. of Agriculture, Washington, D. C. (52). G
*Kinsley, Carl, Quadrangle Club, Chicago, Ill. (47). 1903. B
*Kinyoun, J. J., M. D., 1423 Clifton St., Washington, D. C. (51). 1903. K
Kirby, Gustavus T., 2 Wall St., New York, N. Y. (54). B D
Kirk, Edward C., 554 So. Lansdowne Ave., Lansdowne, Pa. (54).
Kirk, Edwin, Columbia University, New York, N. Y. (57). E F
Kirkland, Archibald, 78 High St., Irvine, Ayrshire, Scotland. (56). C
*Kirkpatrick, E. A., State Normal School, Fitchburg, Mass. (49). 1905. H I
Kirkpatrick, Samuel, M. D., Lauderdale St., Selma, Ala. (51). K
*Kirkwood, Joseph E., Hacienda de Cedros, Mazapil-Zacatecas, Mexico. (51). 1905. G
*Kirschmann, A., Ph. D., Toronto University, Toronto, Can. (50). 1901. F H K
Klaus, Carl F., 979 West 22d St., Chicago, Ill. (58).
Klein, Edward, N. E., College Point, N. Y. (56). C
Kleiner, Israel Simon, 39 Howe St., New Haven, Conn. (57). K
Klepetko, Frank, Consulting Engineer, 1311 West St. Bldg., 90 West St., New York, N. Y. (50). D
Kletzsch, Gustav A., M. D., 453 Cass St., Milwaukee, Wis. (51). K

Klie, G. H. Chas., M. D., 5100 N. Broadway, St. Louis, Mo. (39). C F.

*Klotz, Otto Julius, 437 Albert St., Ottawa, Can. (38). 1889. A

Knab, Frederick, U. S. National Museum Washington, D. C. (53). F

Knapp, Alfred A., M. D., Brimfield, Ill. (51). K

Knapp, G. N., R. F. D. 1, Stanton, Minn. (46). G H

*Knapp, Hon. Martin A., Interstate Commerce Commission, Washington, D. C. (52). 1903. I

Knapp, S. A., Ph. D., U. S. Dept. Agriculture, Washington, D. C. (54). G

*Knight, Prof. Charles M., 129 Union St., Akron, Ohio. (29). 1903. B C

*Knipp, Charles Tobias, 913 West Nevada St., Urbana, Ill. (46). 1900. B

Knopf, S. Adolphus, M. D., 16 West 95th St., New York, N. Y. (57). K

*Knower, Henry McElderry, Ph. D., Johns Hopkins University, Medical Dept., Baltimore, Md. (52). 1905. F

Knowlton, Frank P., A. M., M. D., Asso. Prof. Physiology, Syracuse Univ. Medical Coll., Syracuse, N. Y. (58). K

Knox, Francis Henry, Boise, Idaho. (50). D

Knox, Geo. Platt, Asst. Supt. of Instr., St. Louis Public Schools, 9th and Locust Sts., St. Louis, Mo. (53). C

Knox, Rev. George Wm., Prof. of Philosophy, Union Theological Seminary, New York, N. Y. (55). H I

Knox, Henry H., Mining Engineer, 82 Beaver St., New York, N. Y. (50). D

*Kober, Geo. Martin, M. D., 1819 Q Street N. W., Washington, D. C. (40). 1896. H

*Koch, Waldemar, Ph. D., University of Chicago, Chicago, Ill. (53). 1906. C

*Kofoid, Prof. Charles Atwood, University of California, Berkeley, Cal. (48). 1899. F

Kolb, Gustave F., 58 So. Ninth Ave., Mt. Vernon, N. Y. (57).

Kolbenheyer, Fred'k, M. D., 2006 Lafayette Ave., St. Louis, Mo. (51). K

Kollock, Lily G., Univ. of Illinois, Urbana, Ill. (57). C

*Kortright, Frederic L., Assoc. Prof. Chemistry, West Va. University, Morgantown, W. Va. (55). 1908. C

Koues, Miss Elizabeth L., 282 W. 85th St., New York, N. Y. (41). I

Kovarik, Alois F., M. A., Instr. in Physics, Univ. of Minnesota, Minneapolis, Minn. (58). B

*Kraemer, Prof. Henry, 145 N. 10th St., Philadelphia, Pa. (47). 1901. G

*Kraus, Edward H., Ph. D., University of Michigan, Ann Arbor, Mich. (50). 1906. E

Krause, Otto H., Prospect Ave., Hackensack, N. J. (50).
Krauss, Frederick G., Expert, Hawaii Agric. Exp. Station, Box 162, Honolulu, H. T. (58).
Krécsy, Prof. Béla, VI Bulyovsxky u. 26, Budapest, Hungary. (41). **C**
*Kremers, Prof. Edward, University of Wisconsin, Madison, Wis. (47). 1901. **C**
Kress, Palmer J., M. D., 24 South Seventh St., Allentown, Pa. (51). **K**
Kretz, Walter C., 1115 West State St., Trenton, N. J. (54). **A D**
Kribs, Herbert Guy, 300 Highland Ave., Chestnut Hill, Philadelphia, Pa. (53). **F**
*Kroeber, A. L., Ph. D., Affiliated Colleges, San Francisco, Cal. (47). 1901. **H**
Kudlich, Herman C., 299 Broadway, New York, N. Y. (57).
Kuh, Sydney, M. D., Columbus Memorial Bldg., 103 State St., Chicago, Ill. (54). **H K**
Kummer, Frederic Arnold, Civil Engineer, President United States Wood Preserving Co., 29 Broadway, New York, N. Y. (51). **D**
Kunhardt, Wheaton B., 100 Broadway, American Surety Bldg., New York, N. Y. (49).
Kunkel, Beverly Waugh, Ph. D., Sheffield Biological Laboratory, Yale University, New Haven, Conn. (55). **F**
*Kunz, George Frederick, Ph. D., care of Messrs. Tiffany & Co., 395 Fifth Ave., New York, N. Y. (29). 1883. **C E H**
Kunze, Edward J., Dept. Mech. Engineering, Columbia Univ., New York, N. Y. (57). **B D**
*Lachman, Arthur, Ph. D., Petaluma, Cal. (50). 1901. **C D**
Lachman, Samson, 313 West 106th St., New York, N. Y. (57).
*Ladd, Prof. E. F., Agricultural College, Fargo, No. Dakota. (36). 1889. **C**
Ladd, George Tallman, care of Bass Foundry and Machine Co., Fort Wayne, Ind. (51).
Ladd, James B., Real Estate Trust Bldg., Philadelphia, Pa. (54). **D**
*La Fetra, Linnaeus Edford, M. D., 58 West 58th St., New York, N. Y. (50). 1906. **F H K**
*Laflamme, Prof. J. C. K., Laval University, Quebec, Can. (29). 1887. **B E**
*La Flesche, Francis, 214 First St. S.E., Washington, D C. (33). 1885. **H**
Laidlaw, Alex. Hamilton, M. D., 58 West 53d St., New York, N. Y. (57). **K**
*Laird, Elizabeth Rebecca, Professor of Physics, Mount Holyoke, College, South Hadley, Mass. (56). 1906. **B**

Laird, Miss Ida Marie, A. B., M. D., 424 Oak St., Chicago, Ill. (58). K

*Lamb, Daniel S., M. D., 2114 18th St. N. W., Washington, D. C. (40). 1894. H

Lamb, Geo. Franklin, Prof. of Biology, Mt. Union College, Alliance, Ohio. (57). F

*Lambert, Alexander, M. D., 36 East 31st St., New York, N. Y. (57). 1908. K

*Lambert, Preston A., 215 S. Center St., Bethlehem, Pa. (41). 1896. A

*Lambert, Samuel W., M. D., Dean College Physicians and Surgeons, 130 E. 35th St., New York, N. Y. (57). 1908. K

Lampard, Henry, 51 Hallowell St., Westmont, Quebec. (40). C D E

Lancaster, Walter B., M. D., Amherst, Mass. (51). K

Lance, Harold B., 167 Dana St., Wilkesbarre, Pa. (57). G

*Land, William Jesse Goad, Assistant in Botany, University of Chicago, Chicago, Ill. (52). 1903. G

*Landacre, Francis L., Associate Professor of Zoology and Entomology, Ohio State University, Columbus, Ohio. (53). 1906. F

*Landes, Henry, State Geologist, Seattle, Wash. (51). 1903. E

*Landis, Prof. W. W., Dickinson College, Carlisle, Pa. (50). 1906. A

Landon, Francis G., Staatsburg-on-Hudson, N. Y. (50).

*Landreth, Olin H., Professor of Engineering, Union University, Schenectady, N. Y. (28). 1883. D

Landrum, Robt. D., Prof. of Chemistry, Kansas Univ., 1325 Tenn. St., Lawrence, Kansas. (58). C

*Lane, Alfred C., State Geologist, Lansing, Mich. (50). 1902. E

Lane, Dr. Frank R., Director Jacob Tome Inst., Port Deposit, Md. (57).

Lane, Henry H., Prof. of Zoology, Embryology, State University of Oklahoma, P. O. Box 111, Norman, Okla. (55). F G

Lane, Horace Manley, M. D., Rua da Consolacão 184, S. Paulo, Brazil, South America. (46).

Lange, J. D., 47 West 42d St., Room 305, New York, N. Y. (49).

Lange, Philip A., Supt. Westinghouse Elec. and Mfg. Co., Pittsburg, Pa. (50). D

Langeloth, I., 52 Broadway, New York, N. Y. (57).

*Langenbeck, Karl, K and First Sts., Boston, Mass. (39). 1896. C

Langland, James, Daily News Office, Chicago, Ill. (58).

*Langmann, Gustav, M. D., 121 W. 57th St., New York, N. Y. (36). 1907.

*Langsdorf, Alexander Suss, Assistant Professor of Electrical Engineering, Washington University, St. Louis, Mo. (50). 1903. B D

*Langworthy, Charles Ford, Department of Agriculture, Washington, D. C. (56). 1908. C K

Lansing, John Ernest, Hobart College, Geneva, N. Y. (52). C

Lantz, Miss Willie A., Teacher of Science, Woman's College, Frederick, Md. (54). F G

*Lanza, Prof. Gaetano, Mass. Institute Technology, Boston, Mass. (29). 1882. A B D

Laramy, Robert Edward, 511 South Gay St., Phoenixville, Pa. (51). E

*Larkin, Edgar L., Director of Lowe Observatory, Echo Mountain, Cal. (51). 1903. A

Larkin, John Charles, M. D., Hillsboro, Ohio. (54). K

Larned, S. J., 203 Washington St., Chicago, Ill. (58).

Larocque, Jos., 40 Wall St., New York, N. Y. (57).

Larrabee, Austin P., 630 Lytton Ave., Palo Alto, Cal. (54). F

Larson, Ole S., care of Scandinavian American Bank, Seattle, Wash. (58).

Lathbury, B. Brentnall, C. E., Consulting Engineer, Land Title Bldg., Philadelphia, Pa. (51). D

Lathrop, Bryan, 77 Bellevue Place, Chicago, Ill. (58).

Lathrop, Francis, 29 Washington Square, New York, N. Y. (57).

Latta, James Edward, Teacher of Physics, Univ. of North Carolina, Chapel Hill, N. C. (54). B

Latta, John Milton, M. D., 115 N. Lawrence St., Wichita, Kans. (54). K

*Lattimore, Prof. S. A., University of Rochester, Rochester, N. Y. (15). 1874. C

Lauder, George, 7403 Penn Avenue, Pittsburg, Pa. (50).

Laughlin, Charles E., M. D., Supt. So. Ind. Hospital for Insane, Evansville, Ill. (58). K

Lauman, George Nieman, Asst. Prof. of Rural Economy, Cornell University, Ithaca, N. Y. (50). I

Lavers, Enoch C., Ph. D., 126 Porter St., Easton, Pa. (54). A

Laves, Kurt, Prof. of Astromomy, Univ. of Chicago, Chicago, Ill. (58). A

Law, Benedict W., Collins, N. Y. (45). E

Lawbaugh, Elmer Arthur, 716 Oregonian Building, Portland, Oregon. (52). K

*Lawrence, A. E., 53 Devonshire St., Boston, Mass. (49). 1906. B

Lawrence, Florus F., M. D., Chief of Staff and Surgeon, Lawrence Hospital, 328 East State St., Columbus, Ohio. (53). K

Lawrence, G. Alfred, 10 East 58th St., New York, N. Y. (57).

*Lawrence, Harry E., Univ. of Rochester, Rochester, N. Y. (44). 1906. B

Lawrence, James W., Professor of Mechanical Engineering, State Agricultural College, Fort Collins, Colo. (50). D

*Lawson, Andrew C., Professor of Geology and Mineralogy, University of California, Berkeley, Cal. (50). 1901. E

Lay, Henry Champlin, Civil and Mining Engineer and Geologist, U. S. Deputy Mineral Surveyor, Telluride, Colo. (50). D E

Lazell, Ellis W., Ph. D., care of A. S. Spackman Engineering Co., 42 N. 16th St., Philadelphia, Pa. (51). C

*Lazenby, W. R., Columbus, Ohio. (30). 1882. B I

*Lea, Henry C., 2000 Walnut St., Philadelphia, Pa. (54). 1906.

*Leach, Miss Mary F., Western College, Oxford, Ohio. (44). 1896. C

*Leaming, Edward, 437 West 59th St., New York, N. Y. (50). 1901. C

*Leavitt, Frank M., Mechanical Engineer, 258 Broadway, New York, N. Y. (51). 1903. D

*Leavitt, Henrietta S., Harvard College Observatory, Cambridge, Mass. (55). 1907. A

*Le Baron, J. Francis, Civil and Mining Engineer, R. F. D. 3, Chardon, Ohio. (51). 1903. D E F H

*Le Brun, Mrs. Michel M., 8 Mountain Ave., S., Montclair, N. J. (35). 1892. F

Le Conte, Louis Julian, Civil Engineer, P. O. Box 482, Oakland, Cal. (51). D

Le Conte, Robert Grier, M. D., 1625 Spruce Street, Philadelphia, Pa. (51). K

Le Count, E. R., M. D., 6026 Monroe Ave., Chicago, Ill. (58). K

*Ledoux, Albert R., Ph. D., 99 John St., New York, N. Y. (26). 1881. C

Lee, Blewett, 1 Park Row, Chicago, Ill. (58).

*Lee, Edwin, Professor of Chemistry, Allegheny College, Meadville, Pa. (53). 1908. B C F

*Lee, Frederic S., Adjunct Professor of Physiology, Columbia University, New York, N. Y. (49). 1901. K

*Lee, Leslie A., Professor of Biology, Bowdoin College, Brunswick, Me. (52). 1906. F

Lee, Tennant, 318 or 319 Godchaux Bldg., New Orleans, La. (55).

*Lee, Thomas G., M. D., Prof. Histology and Embryology, Univ. of Minnesota, Minneapolis, Minn. (55). 1908. F K

*Lee, Prof. Willis Thomas, U. S. Geological Survey, Washington, D. C. (47). 1902. E F

*Leeds, Morris E., 3221 North 17th St., Philadelphia, Pa. (50). 1906. D

*Lefavour, Henry, President Simmons College, Boston, Mass. (42). 1894. B

Le Fevre, Egbert, M. D., 52 West 56th St., New York, N. Y. (57). K

*Lefevre, George, Ph. D., Univ. of Missouri, Columbia, Mo. (55). 1908. F

*LeGras, Gustave, Asst. Prof. Mathematics, College of the City of N. Y., New York, N. Y. (54). 1906. A

LEHMAN, MEYER H., 667 Madison Ave., New York, N. Y. (57).

*Leidy, Joseph, Jr., M. D., 1319 Locust St., Philadelphia, Pa. (51). 1906. K

*Leith, Charles Kenneth, Professor of Economic and Structural Geology, University of Wisconsin, Madison, Wis. (53). 1906. E

Leland, Ora Miner, Asst. Prof. Astronomy and Geodesy, Cornell Univ., Ithaca, N. Y. (54). A B D

Lemley, C., McC., Asst. Engineer, B. & O. R. R. Co., 1712 N. Calvert St., Baltimore, Md. (51). D

Lemon, James S., Ph. D., 31 Park St., Gardner, Mass. (52). I K

Leng, Charles W., 119 Columbia St., West New Brighton, Staten Island, N. Y. (54). F

*Lengfeld, Felix, Ph. D., Consulting and Manufacturing Chemist, 1804 Fillmore St., San Francisco, Cal. (51). 1903. C

*Lenher, Victor, Ph. D., Assistant Professor of Chemistry, Univ. of Wisconsin, Madison, Wis. (52). 1903. C

*Lennon, William H., State Normal School, Brockport, N. Y. (31). 1894. C G

Leonard, John William, Editor of "Who's Who in America," 22 Morningside Ave., New York, N. Y. (51). I

Lesher, Arthur L., 670 Broadway, New York, N. Y. (57).

Lesley, Robert W., 604 Pennsylvania Building, Philadelphia, Pa. (54).

Letson, Miss Elizabeth J., D. Sc., Director Buffalo Society of Natural Sciences, Buffalo, N. Y. (47). E F

*Levene, Dr. P. A., 230 West 139th Street, New York, N. Y. (53). 1906. C K

*Leverett, Frank, 312 N. Thayer St., Ann Arbor, Mich. (37). 1891. E

Leverson, Montague Richard, M. D., 927 Grant Ave., Bronx, New York, N. Y. (54). K

*Levy, Ernest C., M. D., 615 East Franklin St., Richmond, Va. (54). 1906. C K

*Lewis, A. B., C. E., Seward, Alaska. (55). 1908. D

Lewis, Albert Buell, Field Museum, Chicago, Ill. (58).

Lewis, Dr. Bertha, Box 215, Malvern, Pa. (54).

LEWIS, CLARENCE MCKENZIE, care Wm. Salomon & Co., 25 Broad St., New York, N. Y. (47). D

Lewis, Daniel C., Milville, N. J. (57). C D

*Lewis, E. Percival, Associate Professor of Physics, University of California, Berkeley, Cal. (53). 1905. B

Lewis, George Smith, 746 State St., Springfield, Mass. (44). G

*Lewis, J. Volney, Hertzog Hall, Rutgers College, New Brunswick, N. J. (45). 1900. C E

Lewis, Dr. Warren H, Associate Professor of Anatomy, Johns Hopkins University, Baltimore, Md. (57). K

Lewis, Wilfred, Pres. The Tabor Mfg. Co., 5901 Drexel Road, Philadelphia, Pa. (51). 1906. D

Lewisohn, Adolph, 9 West 57th St., New York, N. Y. (57).

Lewton, Frederick Lewis, U. S. Dept. Agriculture, Washington, D. C. (54). F G

Lewton-Brain, L., Director, Division Pathology and Physiology, H. S. P. A. Experiment Station, Honolulu, H. T. (55). G

Libbey, Frederick A., 30 Broad St., New York, N. Y. (57).

*Libbey, Prof. William, Princeton, N. J. (29). 1887. E F

Lichtenauer, Jos. M., 20 Broad St., New York, N. Y. (57). K

Lichthardt, G., Jr., 1800 Capt. Ave., Box 510, Sacramento, Cal. (50). C

Lichty, Daniel, M. D., Masonic Temple, Rockford, Ill. (51). K

Lieb, J. W., Jr., 57 Duane St., New York, N. Y. (57).

Lieber, Hugo, 1 Platt St., New York, N. Y. (53). C

Liebman, Chas. Joseph, 42 East 72d St., New York, N. Y. (58).

Lightfoot, Thos. Montgomery, Asst. Prof. of Physical Science, Central High School, Philadelphia, Pa. (51). G

Lightner, Calvin R., M. D., 2313 Washington Ave., St. Louis, Mo. (53). K

Lihme, C. B., La Salle, Illinois. (57). C

*Lillie, Frank R., Professor of Zoology, University of Chicago. Chicago, Ill. (50). 1901. F

Lincoln, Francis Church, Prof. of Geology and Mineralogy, Mont. School of Mines, Butte, Mont. (57).

Lindahl, Josua, Ph. D., 5700 Peoria St., Chicago, Ill. (55). F

Lindenkohl, Henry, U. S. Coast and Geodetic Survey, Washington, D. C. (47).

*Lindenthal, Gustav, C. E., 45 Cedar St., New York, N. Y. (37). 1891. I

*Lindgren, Waldemar, U. S. Geological Survey, Washington, D. C. (53). 1906. E

*Lindley, Ernest H., Professor Psychology, University of Indiana, Bloomington, Ind. (51). 1905. K

Lindsay, Alexander M., Rochester, N. Y. (41).

Lindsay, John D., 31 Nassau St., New York, N. Y. (57).

*Lindsay, Samuel McCune, Columbia University, New York, N. Y. (54). 1906. I

*Lindsey, Edward, Warren, Pa. (48). 1906. **H I**

Lines, Edwin Fuller, U.S. Geological Survey, Washington, D. C.] (54) **E**

Linford, James Henry, President of the Brigham Young College, Logan, Utah. (52). **F**

*Ling, Charles Joseph, Professor of Physics, Allegheny College, Meadville, Pa. (50). 1901. **A B**

*Ling, George Herbert, Ph. D., Tutor in Mathematics, Columbia University, New York, N. Y. (52). 1906. **A**

Link, J. J., Mermod & Jaccard Bldg., St. Louis, Mo. (58).

Link, Theodore Carl, Carleton Bldg., St. Louis, Mo. (51). **I**

*Linn, Alvin Frank, Ph. D., Professor of Chemistry, Wittenberg College, Springfield, Ohio. (50). 1901. **C**

Linn, George A., M. D., P. O. Box 813, Monongahela, Pa. (51). **K**

*Linton, Edwin, Biological Laboratory, Washington and Jefferson College, Washington, Pa. (51). 1905. **F**

*Linville, Henry R., DeWitt Clinton High School, New York, N. Y. (49). 1906.

Lischer, Benno Edward, M. D., Humboldt Bldg., St. Louis, Mo. (53). **K**

Litchfield, Lawrence, M. D., 5431 Fifth Ave., Pittsburg, Pa. (51). **K**

*Littell, Frank B., U. S. Naval Observatory, Washington, D. C. (49). 1903. **A**

*Little, Arthur D., Chemist, 93 Broad St., Boston, Mass. (54). 1906. **C**

*Littlehales, G. W., 2132 Le Roy Place, Washington, D. C. (52). 1903. **A B D E**

*Livingston, Burton Edward, Ph. D., U. S. Dept. Agriculture, Washington, D. C. (53). 1906. **G**

Livingston, Luther S., Scarsdale, N. Y. (57).

*Lloyd, Francis E., Intercontinental Rubber Co., Hacienda de Cedros Mazapil Zac, Mexico. (48). 1901. **G**

*Lloyd, John Uri, The Lloyd Library, 224 West Court St., Cincinnati, Ohio. (38). 1890. **C F**

Lloyd, M. G., Ph. D., Bureau of Standards, Washington, D. C. (52). 1906. **B**

Lloyd, T. Mortimer, M. D., 125 Pierrepont St., Brooklyn, N. Y. (51). **K**

Lober, John B., 1230 Land Title Bldg., Philadelphia, Pa. (57).

*Lochhead, William, Professor of Biology, Macdonald College, P. O., Quebec, Canada. (51). 1906. **F G**

Locke, Geo. Herbert, Dean of MacDonald College, St. Anne de Bellevue, Quebec, Canada. (57). **L**

Lockwood, Cornelius Wygant, 936 Arlington Ave., Plainfield, N. J. (51). **B E**

Lockwood, Edwin Hoyt, Asst. Prof. Mechanical Engineering, Yale University, New Haven, Conn. (50). **D**

Lodholz, Edward, M. D., University of Pennsylvania, Philadelphia, Pa. (53). K

Loeb, James, 52 William St., New York, N. Y. (57).

*Loeb, Leo, M. D., University of Pennsylvania, Philadelphia, Pa. (51). 1905. K

*Loeb, Morris, Ph. D., 273 Madison Ave., New York, N. Y. (36) 1889. C

*Loew, Dr. Oscar, Mayaguez, P. R. (49). 1900. G

*Loewenstein, Louis C., 16 Wolcoff Road, Lynn, Mass. (54). 1905. D

Loewy, Benno, 206 and 208 Broadway, New York, N. Y. (41).

Logan, Frank G., 2919 Prairie Ave., Chicago, Ill. (42). H

Lomb, Adolph, P. O. Drawer 1033, Rochester, N. Y. (41).

Lomb, Henry, P. O. Drawer 1033, Rochester, N. Y. (41).

Lomb, Henry C., care of Bausch & Lomb Opt. Co., Rochester, N. Y. (43).

*Long, Prof. John H., 2421 Dearborn St., Chicago, Ill. (41). 1895. C

Long, William Henry, Jr., No. Texas State Normal School, Denton, Texas. (50).

Longaker, Daniel, M. D., 1402 N. 16th St., Philadelphia, Pa. (53). K

*Longden, A. C., Ph. D., Professor of Physics, Knox College, Galesburg, Ill. (49). 1901. B

*Longstreth, Morris, 1416 Spruce St., Philadelphia, Pa. (54). 1906.

*Loomis, Elmer Howard, Prof. Physics, Princeton Univ., Princeton, N. J. (54). 1906. B

Loomis, Frederick B., Ph. D., Assistant in Zoology, Amherst College, Amherst, Mass. (50). F

Lord, Franklin B., 49 Wall St., New York, N. Y. (57).

Lord, John Prentiss, M. D., 501 Paxton Blk., Omaha, Neb. (55). K

*Loubat, le Duc de, 47 rue Dumont d'Urville, Paris, France. (46). 1897. H

*Louderback, George Davis, University of California, Berkeley, Cal. (50). 1906. E

*Lough, Dr. J. E., New York University, Washington Square, New York, N. Y. (50). 1901. FI

Loughlin, Gerald Francis, Instructor in Geology, Mass. Institute of Technology, Boston, Mass. (57). E

*Loughridge, Dr. R. H., Univ. of California, Berkeley, Cal. (21). 1874. CE

Lounsbury, Charles P., Government Entomologist, Dept. of Agriculture, Cape Town, South Africa. (52). F

*Love, Edward G., 80 E. 55th St., New York, N. Y. (24). 1882. C

*Love, James Lee, Asst. Prof. Mathematics, Harvard Univ., Cambridge, Mass. (54). 1906. A

Lovejoy, J. R, Genl. Elec. Co., Schenectady, N. Y. (50). D

LOVELAND, HORACE HALL, M. D., Newark, N. Y. (51). K

*Lovett, Edgar Odell, Professor of Mathematics, Princeton University, Princeton, N. J. (51). 1902. A

Low, A. A., Columbia Heights, Brooklyn, N. Y. (43). A

Low, Clarence F., 7887 Elm Street, New Orleans, La. (52). I

*Low, Hon. Seth, 30 East 64th St., New York, N. Y. (29). 1890.

*Lowber, Rev. James William, Ph. D., 113 East 18th St., Austin, Texas. (50). 1906. H I

Lowe, E. N., M. D., Assistant in Biology, The University of Mississippi, University P. O., Miss. (55). F K

Lowe, Houston, V. P., The Lowe Bros. Co., Dayton, Ohio. (52). G

Lowe, Morgan M., M. D., 621 Opelousas Ave., Division A, Algiers, La. (55). K

*Lowell, Percival, 53 State St., Boston, Mass. (36). 1896. A

Lowell, Russell C., 420 Hope St., Providence, R. I. (51).

Lower, William E., M. D., 1021 Prospect Ave., Cleveland, Ohio. (58). K

Lucas, Anthony F., Mining Engineer, 1406 16th St. N.W., Washington, D. C. (50). D E

*Lucas, Daniel Ralph, M. S., 104 West 83d St., New York, N. Y. (57). 1908. K

Luckey, Geo. W. A., Professor of Education, University of Nebraska, 1439 R St., Lincoln, Neb. (56). F G

Ludlow, Miss Clara S., The Plaza, Washington Circle, Washington, D. C. (54).

*Ludlow, Henry Hunt, Lt.-Col. U. S. A. Coast Artillery Corps, Fort Hamilton, N. Y. (54). 1906. A

*Ludlow, Jacob Lott, C. E., Winston-Salem, N. C. (50). B D

Luebkert, Otto, American Audit Co., Colorado Building, Washington, D. C. (50). G

Lukens, Herman T., Francis W. Parker School, 550 Webster Ave., Chicago, Ill. (55). H I

Lull, Richard S., Amherst, Mass. (43). F H

Lum, Elizabeth S., Elizabeth, N. J. (57).

Lummis, William, 320 W. 107th St., New York, N. Y. (57).

Lund, Robert Leathan, 5968 W. Cabanne Place, St. Louis, Mo. (53). D

*Lundin, Carl A. R., care Messrs. Alvan Clark and Sons, Cambridgeport, Mass. (47). 1906. A

*Luquer, Lea McIlvane, Columbia University, New York, N. Y. (49). 1902. E

*Lusk, Graham, 11 E. 74th St., New York, N. Y. (54). 1906. F K

Luther, Miss Agnes Vinton, 151 Scotland Road, South Orange, N. J. (47). E

Lutz, Anne M., Secretary Station for Exper. Evolution, Cold Spring Harbor, L. I., N. Y. (54). F

Lutz, Frank Eugene, Station for Experimental Evolution, Cold Spring Harbor, L. I., N. Y. (53). F

Lybrand, Mrs. William M., 5325 Wayne Ave., Germantown, Pa. (54). I

*Lyford, Edwin F., Springfield, Mass. (33). 1896. B C H

*Lyle, David A., Lieut. Colonel U. S. Army, Augusta Arsenal, Augusta, Ga. (28). 1880. D

*Lyman, Benj. Smith, 708 Locust St., Philadelphia, Pa. (15). 1905. E

Lyman, Chester Wolcott, Assistant to President of International Paper Co., 30 Broad St., New York, N. Y. (50). I

Lyman, Elmer A., Professor of Mathematics, Michigan State Normal School, Ypsilanti, Mich. (53). A

Lyman, George Richard, Asst. Prof. of Botany, Dartmouth College, Hanover, N. H. (57). G

Lyman, Henry H., F. R. G. S., F. E. S., 74 McTavish St., Montreal, Can. (29). E F

Lyman, James, Engineer, Western District, Genl. Elec. Co., 1047 Monadnock Bldg., Chicago, Ill. (50). D

*Lyman, Theodore, Instructor in Physics, Harvard Univ., Cambridge, Mass. (55). 1907. B

Lynch, William H., Prin. Public Schools, Cabool, Mo. (52). I

Lyon, Elias Potter, St. Louis Univ. Medical School, St. Louis, Mo. (58).

Lyon, Marcus Ward, Jr., U. S. National Museum, Washington, D. C. (53).

Lyon, Scott Cary, Tulane University, New Orleans, La. (55). B C

Lyon, T. Lyttleton, Cornell Univ., Ithaca, N. Y. (56). C G

Lyons, Albert Brown, M. D., Consulting Chemist, 72 Brainard St., Detroit, Mich. (50). C F K

*Lyons, Robert E., Professor of Chemistry, University of Indiana, Bloomington, Ind. (51). 1906. C

*Mabery, Prof. C. F., Case School of Applied Science, Cleveland, Ohio. (29). 1881. C

McAdam, D. J., Professor of Engineering, Washington and Jefferson College, Washington, Pa. (51). A

*MacAlister, James, President Drexel Institute, Philadelphia, Pa. (54). 1906. I

*McAllister, Cloyd North, Ph. D., Warrensburg, Mo. (52). 1906. K

McArthur, Lewis L., M. D., 4415 Drexel Blvd., Chicago, Ill. (51). **K**

*McAtee, W. L., U. S. Dept. of Agriculture, Washington, D. C. (54). 1906. **F**

Macbeth, George A., 717 Amberson Ave., Pittsburg, Pa. (50). **D H**

McBride, Hon. George Wickliffe, Portland, Oregon. (51). **H**

McBride, Jas. H., M. D., Pasadena, Cal. (51). **K**

*Macbride, Thomas H., 728 East Washington St., Iowa City, Iowa. (38). 1890. **G**

McBurney, Chas., Dr., Stockbridge, Mass. (57). **K**

McCallie, James Park, Ph.D., H. P. Station, Chattanooga, Tenn. (57). **A**

*McCaskey, H. D., Chief, Division of Mines, Bureau of Science, Manila, P. I (55). 1908. **E**

McCastline, William H., M. D., Instructor in Physical Education. Teachers College, Columbia University, New York, N. Y. (56). **K**

*McCauley, C. A. H., Colonel and Assistant Quartermaster-General, U. S. A., 532 Equitable Bldg., Denver, Colo. (29). 1881.

McCauley, George V., Evanston, Ill. (58). **B D**

*McCaustland, Elmer James, Assistant Professor of Mining and Engineering, Univ. of Alabama, Tuscaloosa, Ala. (52). 1905. **D**

*McCay, Le Roy Wiley, Prof. of Inorganic Chemistry, Princeton, N. J. (57). 1908. **C**

McClelland, James H., M. D., 5th and Wilkins Aves., Pittsburg, Pa. (50). **F K**

McClendon, Jesse F., Ph. D., 911 Lowry St., Columbia, Mo. (57). **F**

*McClintock, Emory, 32 Nassau St., New York, N. Y. (43). 1895. **A**

*McClung, Clarence E., Ph. D., Professor of Zoology, University of Kansas, Lawrence, Kan. (52). 1908. **F**

*McClung, Robert K., D. Sc., Prof. of Physics, Mount Allison Univ., Sackville, N. B., Canada. (56). 1908. **B**

McClure, S. S., 44–60 E. 23d St., New York, N. Y. (57).

McCollum, Burton, Instructor of Physics, University of Kansas, Lawrence, Kansas. (58). **B**

McConnell, Carl P., M. D., 57 Washington St., Chicago, Ill. (58). **K**

McConnell, Guthrie, M. D., 4175 Washington Ave., St. Louis, Mo. (58). **K**

McConnell, Wilbur Ross, Asst. Prof. of Zoology, Penn. State College, State College, Pa. (57). **F**

McCormick, Florence Anna, 5829 Jackson Ave., Chicago, Ill. (55). **F**

McCormick, Harold F., 234 Michigan Ave., Chicago, Ill. (58).

McCormick, Rev. Samuel Black, D. D., LL. D., Chancellor Western Univ. of Pennsylvania, Allegheny City, Pa. (54).

McCourt, Walter Edw., Head of Dept. of Geology, Washington University, St. Louis, Mo. (57). E

*MacCracken, John Henry, Ph. D., LL. D., Syndic. of New York University, New York, N. Y. (52). 1907. I

McCracken, Isabel, Stanford Univ., Cal. (54). F

*McCreath, Andrew S., 121 Market St., Harrisburg, Pa. (33). 1889. C E

McCullough, John G., Hall Farm, No. Bennington, Vt. (57).

McCullough, Laurence Hugh, surveyor, Benson, S. C. (54). C G

McCune, M. Virginia, M. D., 506 West John St., Martinsburg, W. Va. (51). K

McCurdy, Arthur W., 497 Esquimalt Road, Thoburn, B. C. (52).

*McCurdy, Charles W., Ph. D., 331 Witherspoon Bldg., Philadelphia, Pa. (35). 1895. E F

*MacCurdy, George Grant, Ph. D., 237 Church St., New Haven, Conn. (48). 1900. H

McCurdy, Hansford M., Alma College, Alma, Mich. (51). F G

Macdonald, Benjamin J., Lock Box 704, Newburgh, N. Y. (50). I

McDonnell, Curtis C., 2129 18th St. N. W., Washington, D. C., (51). C

*McDonnell, Prof. Henry B., College Park, Md. (40). 1893. C

*MacDougal, Daniel T., Desert Botanical Laboratory, Tucson, Ariz. (44). 1897. G

MacDougall, George R., 131 West 73d St., New York, N. Y. (49).

*MacDougall, Robert, Ph. D., Sedgwick Park, Bronx, New York, N. Y. (49). 1901. F H K

McDowell, Edward Campbell, care The American Car and Foundry Co., 107 Walnut St., Berwick, Pa. (54). D

McDowell, Rt. Rev. Wm. Fraser, 57 Washington St., Chicago, Ill. (58).

*McElfresh, William Edward, Williamstown, Mass. (53). 1906. B

McFadden, Prof. L. H., 40 Warder St., Dayton, Ohio. (32). B C

McFadden, Thomas Gilbert, Dept. of Physics, Jersey City High School, Jersey City, N. J. (48). C

McFarland, Boynton Wells, Ph. D., 278 Canner St., New Haven, Conn. (57). C

McFarland, David Ford, A. M., A. B., University of Kansas, Lawrence, Kans. (58).

MacFarland, Frank Mace, Associate Professor of Histology, Leland Stanford, Jr. University, Stanford University, Cal. (56). F

*Macfarlane, Prof. A., Victoria Ave., Chatham, Ontario, Can. (34). 1886. A B
*Macfarlane, Hon. James R., Judge of Court of Common Pleas, No. 1, Court House, Pittsburg, Pa. (50). 1906. E
*Macfarlane, John M., University of Pennsylvania, Philadelphia, Pa. (41). 1899. F G
McGee, Miss Emma R., Box 197, Farley, Iowa. (33). H
McGee, John Bernard, M. D., 1405 Woodland Ave., Cleveland, Ohio. (51). H K
*McGee, W J, LL. D., Cosmos Cub, Washington, D. C. (27). 1882. E H
McGeoch, Arthur N., Station A., Milwaukee, Wis. (57). A
McGill, John A., M. D., 4938 Drexel Boulevard, Chicago, Ill. (58). K
*McGill, John T., Ph. D., Vanderbilt University, Nashville, Tenn. (36). 1888. C
*McGilvary, Evander Bradley, University of Wisconsin, Madison, Wis. (54). 1906. I
*McGregor, James Howard, Dept. of Zoology, Columbia University, New York, N. Y. (52). 1905. F
*McGregory, Prof. J. F., Colgate University, Hamilton, N. Y. (35). 1892. C
McGuigan, Hugh, Ph. D., Asst. Prof. of Pharmacology, Washington University, St. Louis, Mo. (58). K
*McGuire, Joseph D., 1834 16th St. N. W., Washington, D. C. (51). 1902. H
Machalske, Florentin J., Ph. D., P. O. Box 25, Station W, Brooklyn, N. Y. (52). C
McHatton, Henry, M. D., 335 College St., Macon, Ga. (52). K
MacIntyre, Miss Lucy, 303 West 74th St., New York, N. Y. (49).
Mack, Bernard J., 209–10 Cutting Bldg., Joliet, Ill. (54). C
Mack, Jacob W., 85 Liberty St., New York, N. Y. (49).
Mackenzie, Kenneth K., 139 North Walnut St., East Orange, N. J. (57).
McKay, Alex. Howard, Educational Office, Halifax, Nova Scotia. (57). L
McKay, John S., Ph. D., Packer Collegiate Institute, Brooklyn, N. Y. (52).
McKay-Smith, The Right Reverend Alexander, D. D., S. T. D., 251 South 22d St., Philadelphia, Pa. (57). I
McKee, Garnet W., Cor. Michigan Ave. and Adams St., Chicago, Ill. (58). C
McKee, Ralph Harper, Ph. D., Professor of Chemistry, Lake Forest University, Lake Forest, Ill. (53). C
McKellar, Peter, Fort William, Ontario, Canada. (56). E

McKelvey, Chas. W., Att'y and Counsellor at Law, 49 Wall St., New York, N. Y. (57).

McKelvey, James Percy, M. D., 519 No. Highland Ave., Pittsburg, Pa. (58).

McKelvey, John Jay, 84 William St., New York, N. Y. (57).

McKelvy, William H., M. D., President Board of Education, 420 6th Ave., Pittsburg, Pa. (50). I

McKelway, A. J., State Sec'y Nat. Child Labor Committee, Charlotte, N. C. (55). I

*McKenney, Randolph Evans Bender, Ph. D., care United Fruit Co., Bocas del Toro, Panama. (51). 1903. G

McKenzie, John H., Rector, Howe School, Lima, Indiana. (58).

*McKinney, Thomas Emery, Dept. of Mathematics, Wesleyan University, Middleton, Conn. (50). 1906. A

Mackintosh, Roger S., Professor of Horticulture, Agric. Exper. Station Auburn, Ala. (53). G

McLain, Louis Randolph, Pres. of Florida Engineering Co., St. Augustine, Fla. (51). D

McLaughlin, A. C., Houston Oil Co. of Texas, Houston, Texas. (52). C D E

McLaughlin, Thomas N., 1226 N St. N.W., Washington, D. C. (52).

McLaury, Howard L., Prof. of Mathematics and Physics, So. Dakota School of Mines, Rapid City, So. Dak. (50). A B

*Maclay, James, Ph. D., Adjunct Professor of Mathematics, Columbia University, New York, N. Y. (52). 1907. A

McLean, Miss Charlotte F., Ph. D., Birmingham School, Birmingham, Pa. (54).

Maclean, Geo., Van Dyck Studio Bldg., 939 Eighth Ave., New York, N. Y. (57).

*MacLean, George Edwin, President of the State University of Iowa, Iowa City, Iowa. (52). 1903. I

*McLennan, J. C., Professor of Physics, Toronto University, Toronto, Ontario, Can. (51). 1903. B

*Macleod, John James Rickard, Western Reserve Medical College, Cleveland, Ohio. (55). 1907. K

*Macloskie, Prof. George, Princeton Univ., Princeton, N. J. (25). 1882. F G

*McMahon, Prof. James, Cornell University, Ithaca, N. Y. (36). 1891. A B

*MacMillan, Conway, University of Minnesota, Minneapolis, Minn. (53). 1906. G

MacMillan, Dr. Daniel P., Director Dept. Child Study and Pedagogic Instruction, care of Board of Education, Chicago, Ill (57). L

McMillan, Smith B., Signal, Ohio. (37).

MacMillan, Wm. Duncan, 5407 Woodlawn Ave., Chicago, Ill. (58). **A**

McMillin, Emerson, 40 Wall St., New York, N. Y. (37).

McMullen, Joseph Francis, 1908 Nora Ave., Spokane, Washington. (52). **E G**

*McMurtrie, William, 480 Park Ave., New York, N. Y. (22). 1874. **C**

McMurtry, Dr. Wood, 812 Fifth Ave., New York, N. Y. (57). **K**

*McNair, Fred Walter, President Michigan College of Mines, Houghton, Michigan. (51). 1902. **B D**

McNally, James, 166 Adams St., Chicago, Ill. (58).

McNeil, Hiram Colver, Ph. D., 132 V St. N. W., Washington, D. C. (51). **B C**

*McNeill, Malcolm, Professor Mathematics and Astronomy, Lake Forest University, Lake Forest, Ill. (32). 1885. **A**

McNulty, Geo. Washington, Civil Engineer, 153 West 79th St., New York, N. Y. (51). **D**

*McNulty, John J., Ph. D., College of City of New York, New York, N. Y. (50). 1906.

*MacNutt, Barry, Lehigh University, So. Bethlehem, Pa. (47) 1900. **B**

*McPherson, Prof. Wm., Ohio State Univ., Columbus, Ohio. (45). 1898. **C**

*McRae, Austin Lee, Professor of Physics, School of Mines and Metallurgy, University of Missouri, Rolla, Mo. (39). 1891. **B**

McSurely, Wm. H., 5037 Washington Ave., Chicago, Ill. (58).

*MacVannel, John Angus, Instructor in Philosophy and Education, Columbia University, New York, N. Y. (52). 1905. **I**

McVicker, Wm. B., 299 Broadway, New York, N. Y. (57).

Macy, V. Everit, 68 Broad St., New York, N. Y. (49).

Madison, Harold L., Professor of Natural Science, Union Univ., Jackson, Tenn. (55). **F**

Mager, F. Robert, Armour Villa Park, Yonkers, N. Y. (57).

Magers, S. D., Ypsilanti, Mich. (58).

*Magie, Prof. Wm. Francis, 78 Library Place, Princeton, N. J. (35). 1887. **B**

Maglott, Mrs. Eva S., Prof. of Mathematics, Ohio Northern University, Ada, O. (58). **A**

Magnuson, J. P., Prof. Chemistry and Physics, Augustana College, Rock Island, Ill. (57). **B C**

Magnusson, Carl Edward, Ph. D., University of Washington, Seattle, Wash. (51). **B**

*Magruder, Egbert W., Chemist, Department of Agriculture, Richmond, Va. (51). 1906. **C**

*Magruder, Wm. T., Ohio State Univ., Columbus, Ohio. (37). 1899. **D**

Maher, John J., V. D. S., 1535 Franklin St., Philadelphia, Pa. (53). F

Mahoney, Stephen A., M. D., 206 Maple St., Holyoke, Mass. (51). K

Maignen, Prosper Auguste, 52 N. 13th St., Philadelphia, Pa. (54).

*Major, David R., Ph. D., Prof. of Education, Ohio State University, Columbus, Ohio. (51). 1906. H I

*Mall, Franklin P., M. D., LL.D., Johns Hopkins Med. School, Baltimore, Md. (57). 1908. H K

*Mallet, J. W., University of Virginia, Charlottesville, Va. (52). 1906.

Mallinckrodt, Edw., P. O. Sub-Station A, St. Louis, Mo. (29). C

MALLINCKRODT, EDW., JR., 26 Vandeventer Place, St. Louis. Mo. (53). G

*Mallory, Frank Burr, M. D., Harvard Medical School, Boston, Mass. (54). 1906. K

*Maltby, Margaret E., Ph. D. Barnard College, New York, N. Y. (46). 1898. B

Mammen, Ernest, M. D., Bloomington, Ill. (58). K

*Mandel, Prof. John A., Bellevue Hospital Medical Col., New York, N. Y. (57). 1908. C

Mangan, Daniel C., M. D., 95 Park Ave., Brooklyn, N. Y. (50). F K

Manierre, Chas. E., 31 Nassau St., New York, N. Y. (57).

Manly, John M., 6028 Jackson Park Ave., Chicago, Ill. (58).

Mann, Albert, Ph. D., 1216 Connecticut Ave. N. W., Washington, D. C. (43). G

*MANN, B. PICKMAN, 1918 Sunderland Place, Washington, D. C. (22). 1874. F I

Mann, C. Riborg, Ph. D., University of Chicago, Chicago, Ill. (57). 1908.

Mannheimer, George, M. D., 60 East 58th St., New York, N. Y. (58). K

Manning, Charles H., U. S. N., Manchester, N. H. (35). D

Manning, Miss Eva, 1330 Columbia Road, Washington, D. C. (52). E H

*Manning, Henry Parker, Brown Univ., Providence, R. I. 1907. (55).

Manning, J. Woodward, 1101 Tremont Building, Boston, Mass. (47). G

[Manns, Thomas Franklin, M. S., Asst. Botanist, Ohio Agri. Exper. Sta., Wooster, Ohio. (58). G

Manny, F. A., 414 West 118th St., New York, N. Y. (58).

Mansbach, E., 1292 Madison Ave., New York, N. Y. (57).

Mansfield, Frank A., Westfield, Mass. (57). **H I K**

Mansfield, George Rogers, Ph. D., Instructor in Geology, Harvard University, Cambridge, Mass. (57). **E**

Manson, Marsden, C. E., Ph. D., Comm'r of Public Works, 2010 Gough St., San Francisco, Cal. (51). **D**

*Manwaring, Wilfred Hamilton, M. D., Rockefeller Inst. for Medical Research, New York, N. Y. (55). 1908. **K**

Mapes, Charles Victor, 60 W. 40th St., New York, N. Y. (37). **C**

Marble, J. Russel, Worcester, Mass. (31). **C E**

MARBLE, MANTON, Bedford, N. Y. (36).

Marckworth, O. S., State Chemist, Board of Trade, Columbus, Ohio. (57). **C**

Marcon, John B., Princeton, Mass. (57).

Mariott, Walter R., Asst. in Mathematics, Swarthmore College, Swarthmore, Pa. (57). **A**

*Mark, E. H., Superintendent of Public Schools, Center and Walnut Sts., Louisville, Ky. (39). 1893. **B**

*Mark, Edward Laurens, Director Zoological Laboratory, Harvard University, Cambridge, Mass. (50). 1901. **F**

Markham, George Dickson, 4961 Berlin Ave., St. Louis, Mo. (50).

Markle, John, 31 Nassau St., New York, N. Y. (57).

MARKOE, FRANCIS H., 15 East 49th St., New York. (57). **K**

Marks, Louis B., 220 Broadway, New York, N. Y. (50).

Marks, Lucy Ballard, 550 Fifth Ave., New York, N. Y. (57).

*Marks, William Dennis, C. E., The Art Club, Philadelphia, Pa. (50). 1906. **I**

Marlatt, Miss Abby L., Tech. High School, Providence, R. I. (48).

*Marlatt, Charles L., U. S. Department Agriculture, Washington, D. C. (40). 1895. **F**

MARLING, ALFRED E., 47 W. 47th St., New York, N. Y. (57).

Marlow, Frank William, M. D., 200 Highland St., Syracuse, N. Y. (50). **F H I K**

MARMOR, REV. J. D., 25 East 114th St., New York, N. Y. (52). **E H K**

Marple, Charles A., 2046 69th St., E. Cleveland, Ohio. (39). **B**

*Marsh, C. Dwight, Dept. Agric., Washington, D. C. (34). 1893. **E F**

Marsh, Millard C., Bureau of Fisheries, Washington, D. C. (54).

Marshall, Horace Miller, U. S. Engineer Office, Vicksburg, Miss. (51). **D**

Marshall, Henry Rutgers, 3 West 29th St., New York, N. Y. (57).

MARSHALL, LOUIS, 47 East 72d St., New York, N. Y. (57).

Marsters, Vernon F., Apartado 856, Lima, Peru, S. A. (49).

Marston, Edwin S., South Orange, N. J. (50).

*Martin, Artemas, Ph. D., LL.D., U. S. Coast and Geodetic Survey, Washington, D. C. (38). 1890. **A**

*Martin, Daniel S., 756 Quincy St., Brooklyn, N. Y. (23). 1879. E F

*Martin, Emilie Norton, Ph. D., Mt. Holyoke College, South Hadley, Mass. (54). 1906. A

*Martin, F. W., Ph. D., College Park, Lynchburg, Va. (49). 1905. C

*Martin, George C., U. S. Geological Survey, Washington, D. C. (51). 1903. E

Martin, Geo. W., Professor of Biology, Vanderbilt University, Nashville, Tenn. (52). F

Martin, John, Grymes Hill, Stapleton, Staten Island, N. Y. (56). I

*Martin, Louis Adolphe, Jr., Asst. Prof. in Mathematics and Mechanics, Stevens' Institute, Hoboken, N. J. (53). 1906. A

Martin, William Lyon, Augusta, Ga. (51). G

*Marvin, C. F., U. S. Weather Bureau, Washington, D. C. (39). 1892. B

*Marvin, Frank O., Dean School of Engineering, University of Kansas, Lawrence, Kan. (35). 1894. D

Marvin, Harry Norton, Canastota, N. Y. (50). D

Marvin, Joseph B., M. D., LL. D., President, Kentucky University, Louisville, Ky. (51). I

Maschcowitz, Alex. V., M. D., 925 Madison Avenue, New York, N. Y. (56). K

Mason, Herbert Warren, care of S. D. Warren & Co., 161 Devonshire St., Boston, Mass. (53). D

Mason, Miss Nellie M., Teacher of Science, Abbot Academy, Andover, Mass. (50). B C

*Mason, Otis T., Ph. D., LL. D., U. S. National Museum, Washington, D. C. (25). 1877. H

*Mason, Dr. William P., Rensselaer Polytechnic Inst., Troy, N. Y. (31). 1886. C

Massey, Wilbur Fisk, Botanist and Horticulturist, Agricultural Exper. Station, Raleigh, N. C. (51). G

Mast, Samuel Ottnear, Ph. D., Johns Hopkins Univ., Baltimore, Md. (52).

*Matas, Rudolph, M. D., Professor of Surgery, Tulane University, New Orleans, La. (50). 1906. F H K

Matausch, Ignaz, 507 Columbus Ave., New York, N. Y. (57).

Mateer, Horace N., M. D., Wooster, Ohio. (36). E F

Matheson, Robert, Instructor in Entomology, So. Dak. State College of Agric. and Mechanic Arts, Brookings, S. D. (58). F

Matheson, Wm. J., 182 Front St., New York, N. Y. (54). I

*Mathews, Albert P., Prof. of Physiological Chemistry, University of Chicago, Chicago, Ill. (57). 1908. C K

*Mathews, John A., Ph. D., Crucible Steel Co. of America, Experimental Dept., Syracuse, N. Y. (50). 1902. C E

Mathews, Miss Mary Elizabeth, 1806 East 90th St., Cleveland, Ohio. (41). F

Mathewson, Edward P., 422 Hickory St., Anaconda, Mont. (57). C

Matlack, Charles, "Hidden Hearth," Matunuck, R. I. (27). I

Matthes, Francois E., U. S. Geological Survey, Washington, D. C. (52). E

*Matthew, William Diller, Ph. D., American Museum of Nat. Hist., New York, N. Y. (54). 1906. E F

Matthews, Albert, Hotel Oxford, Boston, Mass. (51). H

Mattison, Fitch C. E., M. D., 295 W. California St., Pasadena, Cal. (51). K

Mattoon, A. M., Scott Observatory of Park College, Parkville, Mo. (47). A

*Maurer, Edward R., Professor of Mechanics, University of Wisconsin, Madison, Wis. (53). 1906. D

Maury, Carlotta J., Ph. D., Hastings-on-Hudson, N. Y. (57). E F

Maxim, Hudson, 698 St. Marks Ave., Brooklyn, N. Y. (56). C

*Maxon, William R., U. S. National Museum, Washington, D. C. (49). 1906. G

Maxwell, Fred. Baldwin, Ph. D., 308 Franklin Ave., River Forest, Oak Park P. O., Ill. (51). F

Maxwell, George H., Executive Chairman, National Irrigation Association, 1403 Fisher Bldg., Chicago, Ill. (50). E

Maxwell, Otis Allen, Prin. High School, Denison City, Texas. (57). L

*Mayer, Alfred Goldsborough, S. D., M. E., Director of Marine Laboratory, Carnegie Inst., Tortugas via Key West, Fla. (47). 1900. F

Maynard, Washburn, Rear Admiral, U. S. N., Narragansett Pier, R. I. (33). B

*Mead, Albert Davis, Brown University, Providence, R. I. (52). 1905. F

Mead, Chas. S., 217 King Ave., Columbus, Ohio. (52). F

Mead, George H., University of Chicago, Chicago, Ill. (58).

Mead, Marvin Hulst, 382 River Drive, Passaic, N. J. (57).

Means, James, 196 Beacon St., Boston, Mass. (47).

MEARS, J. EWING, 1535 Land Title Bldg., Philadelphia, Pa. (56). I

Mebus, Charles F., 908–909 Land Title Bldg., Philadelphia, Pa. (54)

Medsger, Oliver P., 609 Kearny Ave., Arlington, N. J. (50). G.

Meeker, George H., Ph. D., LL. D., Prof. of Chemistry, Medico-Chirurgical College, Media, Pa. (57). C

*Mees, Prof. Carl Leo, Rose Polytechnic Institute, Terre Haute, Ind. (24). 1876. B C

Meigs, Edward B., M. D., Harvard Medical School, Boston, Mass. (53). K

Meigs, Montgomery, U. S. A., U. S. Civil Engineer, U. S. Eng'r Office, Keokuk, Iowa. (51). D

*Meisenhelder, Edmund Webster, Jr., M. D., 342 W. Market St., York, Pa. (57). 1908. K

*Mell, P. H., Ph. D., President Clemson Agricultural College, Clemson College, S. C. (39). 1895. E G

Mellor, Alfred, President of the Mellor and Rittenhouse Co., 2130 Mt. Vernon St., Philadelphia, Pa. (51).

Mellor, Charles C., 319 Fifth Ave., Pittsburg, Pa. (38).

*Meltzer, S. J., M. D., 107 West 122d St., Rockefeller Institute, New York, N. Y. (49). 1901. K

*Mendel, Lafayette B., Ph. D., Sheffield Scientific School, Yale University, New Haven, Conn. (53). 1907. K

Mendelson, Walter, M. D., 159 West 74th St., New York, N. Y. (57). K

*Mendenhall, Charles E., Ph. D., University of Wisconsin, Madison, Wis. (48). 1900. B

*Mendenhall, Prof. T. C., Worcester Polytechnic Inst., Worcester, Mass. (20). 1874. B

*Mendenhall, Walter Curran, U. S. Geological Survey, Washington, D. C. (52). 1903. E

Menefee, Evalyn L., M. D., Granbury, Hood Co., Texas. (57). K

Mengel, Prof. Levi W., Boys High School, Reading, Pa. (52).

Menges, Franklin, Ph. D., 233 East Philadelphia St., York, Pa. (58). C

*Mercer, H. C., Doylestown, Pa. (41). 1893. H

Mercer, William Fairfield, Ph. D., Professor of Biology, Ohio University, Athens, Ohio. (50). F

Merigold, Benjamin S., Assistant Professor of Chemistry, Clark University, Worcester, Mass. (56). C

Merrell, Miss Caroline Wallace, 2950 Frankford Ave., Philadelphia, Pa. (54). G

Merrell, Dr. W. D., Univ. of Rochester, Rochester, N. Y. (58). G

*Merriam, Dr. C. Hart, U. S. Department Agriculture, Washington, D. C. (49). 1900. F G H

Merriam, Edmund Sawyer, Ph. D., Professor of Chemistry, Marietta College, Marietta, Ohio. (56). C

*Merriam, John C., Ph. D., Assistant Professor of Paleontology and Historical Geology, Univ. of California, Berkeley, Cal. (52). 1905. E

Merrick, E. D., 11th St., 3d to 4th Aves., New Brighton, Pa. (57).

Merrill, Elmer Drew, Botanist, Bureau of Science, Dept. of the Interior, Manila, P. I. (50). G

*MERRILL, FREDERICK J. H., Ph. D. (35). 1887. E

*Merrill, Joseph Francis, Ph. D., Professor of Physics and Electrical Engineering, University of Utah, Salt Lake City, Utah. (50). 1908. B D

Merrill, Lucius Herbert, Professor of Biological and Agricultural Chemistry, University of Maine, Orono, Maine. (50). C

MERRILL, MRS. WINIFRED EDGERTON, Ph. D. (35). A

*Merriman, C. C., 1910 Surf St., Lake View, Chicago, Ill. (29). 1880. F

*Merriman, Mansfield, Consulting Engineer, 45 Broadway, New York, N. Y. (32). 1885. A D I

*Merritt, Ernest, Cornell University, Ithaca, N. Y. (33). 1890. B

*Merrow, Miss Harriet L., Rhode Island College of Agriculture and Mechanic Arts, Kingston, R. I. (44). 1906. G

*Mershon, Ralph D., Consulting Engineer, 116 W. 85th St., New York, N. Y. (50). 1906. D

*Messenger, Hiram John, 637 Farmington Ave., Hartford, Conn. (54). 1906. I

*Messenger, J. Franklin, Ph. D., Farmville, Va. (52). 1905. H K

*Metcalf, Haven, U. S. Dept. Agriculture, Washington, D. C. (52). 1903. G

*Metcalf, Maynard M., Ph. D., Professor of Zoology, Oberlin College, Oberlin, Ohio. (50). 1901. F

METCALF, ORLANDO, 424 Telephone Building, Pittsburg, Pa. (35). D

*Metcalf, William, 5821 Wilkins Ave., Pittsburg, Pa. (33). 1894. D

Metcalf, William F., M. D., 636 Woodward Ave., Detroit, Michigan. (58). K

Metcalf, Wilmot V., 227 Oak St., Oberlin, Ohio. (50). B C

Metz, A. L., M. D., Prof. Chemistry, Medical Dept., Tulane Univ., New Orleans, La. (55). C K

*Metzler, William H., Ph. D., Syracuse University, Syracuse, N. Y. (45). 1899. A

*Meyer, Adolf, M. D., Director of Pathological Institute of N. Y. State Hospital, Ward's Island, New York, N. Y. (52). 1905. K

Meyer, Alfred, M. D., 785 Madison Ave., New York, N. Y. (57). K

*Meyer, Gustave Maurice, Ph. D., College of Medicine, Syracuse, N. Y. (57). 1908. K

Meyer, J. Frank, Ph. D., Prof. of Physics, Penna. State College, State College, Pa. (51). C

*Meyer, Max, Ph. D. Professor of Psychology, University of Missouri, Columbia, Mo. (49). 1901. H I

Meyer, Dr. Willy, 700 Madison Ave., New York, N. Y. (57). K

Meyers, Ira Benton, The School of Education, University of Chicago, Chicago, Ill. (58).

Meyers, Joseph G., 111 Fifth Ave., New York, N. Y. (57).

*Meylan, George L., M.D., Adjunct Prof. and Medical Director, Columbia University, New York, N. Y. (53). 1907. K

Meyrowitz, Emil B., 104 East 23d St., New York, N. Y. (57).

*Mezes, Sidney Edward, Professor of Philosophy, University of Texas, Austin, Texas. (50). 1901. I

Michael, Ellis LeRoy, East Hall, Univ. of Cal., Berkeley, Cal. (57). F

*Michelson, Prof. A. A., Chicago University, Chicago, Ill. (26). 1879. B

*Middlekauff, George Wiles, Bureau of Standards, Washington, D. C. (57). 1908. B

Miles, Egbert J., 6032 Ellis Ave., Chicago, Ill. (57). A

Miles, George F., U. S. Dept. Agriculture, Washington, D. C. (54). G

Miles, George W., 29 Central St., Boston, Mass. (58). C

*Milham, Willis I., Williams College, Williamstown, Mass. (47). 1905. A B

Millar, John M., Escanaba, Mich. (50).

Miller, A. Merrill, M. D., Danville, Ill. (58).

*Miller, Arthur M., Professor of Geology and Zoology, State College, Lexington, Ky. (45). 1898. E F

*Miller, Benjamin LeRoy, Lehigh Univ., South Bethlehem, Pa. (50). 1907. E

Miller, C. R., Great Neck, N. Y. (57).

*Miller, Prof. Dayton C., Case School of Applied Science, Cleveland, Ohio. (44). 1898. B

MILLER, EDGAR G., Equitable Bldg., Baltimore, Md. (29). A

Miller, Dr. Eli P., 37-41 W. 26th St., New York, N. Y. (57).

Miller, Emerson R., Auburn, Ala. (52). C

*Miller, Ephraim, Professor of Mathematics and Astronomy, State University, Lawrence, Kan. (50). 1901. A

Miller, Francis Garner, Prof. of Forestry, University of Nebraska, Lincoln, Neb. (57). G

Miller, Frank E., Professor of Mathematics, Otterbein University, Westerville, Ohio. (44). A

Miller, Capt. Frederick Augustus, U. S. N., 2201 Massachusetts Ave., Washington, D. C. (52).

*Miller, Fred. J., Editor of "American Machinist," Box 27, Centerbridge, Pa. (51). 1906. **D**

*Miller, George A., Ph. D., 907 W. Nevada St., Urbana, Ill. (46). 1898. **A**

Miller, George N., M. D., 811 Madison Ave., New York, N. Y. (50). **F K**

*Miller, Gerrit S., U. S. National Museum, Washington, D. C. (51). 1906. **F**

Miller, Henry Huntington, Mineral Development Co., Apartado 52, Guanajuato, Mexico. (50). **C D E**

Miller, Horace George, M. D., 189 Bowen St., Providence, R. I. (51). **K**

Miller, James Shannon, Professor of Mathematics, Emory and Henry College, Emory, Va. (51). **A B**

*Miller, John A., Professor of Mechanics and Astronomy, Swarthmore College, Swarthmore, Pa. (51). 1906. **A**

*Miller, J. Craig, M. D., Professor of Natural Science, Lincoln University, Lincoln University, Pa. (50). 1906. **B C F K**

*Miller, Miss Louise Klein, 1351 Euclid Ave., Cleveland, Ohio. (50). 1906. **I**

Miller, Prof. M. F., University of Missouri, Columbia, Mo. (58).

Miller, Newman, Dir., The University of Chicago Press, 5515 Woodlawn Ave., Chicago, Ill. (58). **I E**

Miller, Shirley Putnam, Zoologist, So. Dak. State Coll., Brookings, So. Dak. (58). **F**

*Miller, Prof. William S., University of Wisconsin, Madison, Wis. (42). 1894. **F**

Millet, F. D., 6 East 23d St., New York, N. Y. (57).

Millikan, Robert Andrews, Asso. Prof. of Physics, Univ. of Chicago, Chicago, Ill. (58). **B**

*Millis, John, U. S. Engineer's Office, 813 Prospect Ave., S. E., Cleveland, O. (48). 1906. **A B D E**

Mills, Frank Smith, Andover, Mass. (52). **E**

Mills, James Edward, Instructor in Physical Chemistry, University of North Carolina, Chapel Hill, N. C. (52). **C**

*Mills, Prof. Wesley, McGill University, Montreal, Can. (31). 1886. **F H**

*Mills, William C., Page Hall, Ohio State University, Columbus, Ohio. (48). 1902. **H**

Mills, Wm. Park, M. D., Box 58, Missoula, Mont. (52). **K**

Millspaugh, Chas. Fredk., Prof. of Botany, University of Chicago, Chicago, Ill. (57).

MILNE, DAVID, 2030 Walnut St., Philadelphia, Pa. (51).

*Miner, J. Burt, Ph. D., Univ. of Minnesota, Minneapolis, Minn. (52). 1906. **H K**

Miner, Roy W., Am. Mus. Nat. Hist., New York, N. Y. (57).
Minns, Miss Susan, 14 Louisburg Square, Boston, Mass. (32).
*MINOT, CHARLES SEDGWICK, M. D., Harvard Medical School, Boston, Mass. (28). 1880. F
Mitchell, Arthur, 55 Wendell St., Cambridge, Mass. (58).
MITCHELL, ARTHUR M., 68 Wall St., New York, N. Y. (57).
Mitchell, Edward, 44 Wall St., New York, N. Y. (50).
Mitchell, Evelyn Groesbeck, 813 T St. N. W., Washington, D. C. (54). F
*Mitchell, Prof. Henry Bedinger, Columbia University, New York, N. Y. (50). 1906. A
Mitchell, J. Pearce, Stanford University, Cal. (51). C
*Mitchell, S. Alfred, Ph. D., Columbia University, New York, N. Y. (52). 1906. A B
*Mitchell, Walter Mann, 112 N. 34th St., Philadelphia, Pa. (54). 1908. A
Mitchell, Walter Reynolds, 433 East 57th St., Hyde Park, Chicago. (58). G L
Mitchell, William Francis, M. D., Lancaster, Mo. (51). K
Mixer, Chas. Adam, C. E., Engineer, Rumford Falls Power Co., Rumford Falls, Maine. (51). D
Mixer, Fred. K., 313 Delaware Ave., Buffalo, N. Y. (35). E
*Miyake, Kiichi, Ph. D., Doshisha College, Kioto, Japan. (51). 1903. G
*Moenkhaus, Wm. J., University of Indiana, Bloomington, Ind. (51). 1903. F
Moffatt, W. S., M. D., 181 La Salle St., Chicago, Ill. (58). K
*Mohler, John F., Professor of Physics, Dickinson College, Carlisle, Pa. (44). 1905. B
Mohr, Louis, M. E., 32 Illinois St., Chicago, Ill. (50). A D
Mojonnier, Timothy, care of Helvetia Milk Condensing Co., Delta, Ohio. (52). C
*Moler, Geo. S., 408 University Ave., Ithaca, N. Y. (38). 1892. B
MOLERA, E. J., C. E., 606 Clay St., San Francisco, Cal. (50). D
Molitor, David, Civil and Consulting Engineer, 25 N. Park Ave., Fond du Lac, Wis. (51). C D
Molitor, Frederic Albert, care of Commonwealth Trust Co., St. Louis, Mo. (51). D
Monae-Lesser, Dr. A., 16 West 68th St., New York, N. Y. (57).
Monfort, Wilson F., Chemist to Water Comm., 77 E. May St., St. Louis, Mo. (48). C
Monroe, Joseph E., Professor of Physics and Chemistry, Montana State Normal College, Dillon, Mont. (50). B C
Monroe, Paul, Ph. D., Prof. of History of Education, Teachers College, Columbia Univ., New York, N. Y. (57). I

*Monroe, Will S., Professor of Psychology and Pedagogy, State Normal School, Westfield, Mass. (49). 1901. H K

*Montague, William Pepperell, Adjunct Prof. of Philosophy, Columbia University, New York, N. Y. (54). 1906. H I

Montgomery, Edmund, M. D., Hempstead, Texas. (50). F K

Montgomery, Edmund B., M. D., 134 N. 8th St., Quincy, Ill. (51). K

Montgomery, Dr. Frank Hugh, 5548 Woodlawn Ave., Chicago, Ill. (58). K

*Montgomery, Henry, Ph. D., Univ. of Toronto, Ontario, Canada. (54). 1907. E F H

Montgomery, John R., 181 La Salle St., Chicago, Ill. (58).

*Moody, Mrs. Agnes Claypole, 1733 Bonté Ave., Berkeley, Cal. (46). 1899. F

Moody, Mrs. Mary B., M. D., 154 E. Grand Ave., New Haven, Conn. (25). E F

*Moody, Robert O., M. D., Asst. Prof. Anatomy, Univ. of California, Berkeley, Cal. (35). 1892. F

*Moody, William Albion, Professor of Mathematics, Bowdoin College, Brunswick, Maine. (50). 1906. A

Mooers, Charles Ansel, Univ. of Tennessee, Knoxville, Tenn. (55). C

Mooney, James, Bureau of Ethnology, Washington, D. C. (54). H

Moore, Andrew Charles, Prof. Biol. and Geol., Univ. of S. C., Columbia, S. C. (54). G

Moore, Mrs. A. H., Stanstead, P. Q., Canada. (32). H

*Moore, Burton E., University of Nebraska, Lincoln, Neb. (41). 1899. B

*Moore, Clarence B., 1321 Locust St., Philadelphia, Pa. (44). 1897. H

Moore, C. C., Bur. of Chemistry, Dept. of Agriculture, Washington, D. C. (58). C

*Moore, Eliakim Hastings, Professor of Mathematics, University of Chicago, Chicago, Ill. (52). 1902. A

*Moore, George Thomas, Water Mill, L. I., New York. (49). 1901. G

*Moore, J. Percy, Ph. D., Instructor in Zoology, Biological Hall, Univ. of Pa., Philadelphia, Pa. (54). 1906. F

*Moore, J. W., M. D., Lafayette College, Easton, Pa. (22). 1874. A B D

*Moore, Philip North, Geologist and Mining Engineer, 611 Merchants-Laclede Bldg., St. Louis, Mo. (50). 1903. E

Moore, Robert, Consulting Engineer, 61 Vandeventer Place, St. Louis, Mo. (51). D

Moore, Stanley H., McKinley High School, St. Louis, Mo. (50). A D

Moore, V. A., Cornell Univ., Ithaca, N. Y. (57).
*Moore, Prof. Willis L., Chief of the Weather Bureau, U. S. Dept Agriculture, Washington, D. C. (44). 1897. B
*Moorehead, Warren K., Curator of Museum, Phillips Academy, Andover, Mass. (38). 1890. H
More, Louis Trenchard, Prof. of Physics, University of Cincinnati, Cincinnati, Ohio. (58). B
Morgan, A. C., U. S. Dept. Agriculture, Washington, D. C. (54). F
*Morgan, H. A., Director Agric. Exper. Station, Knoxville, Tenn. (50). 1906. F
Morgan, J. Frank, Agr. Exper. Station, Kingston, R. I. (55). C
*Morgan, T. Hunt, Ph. D., Prof. of Zoology, Columbia University New York, N. Y. (54). 1906. K
*Morgan, Wm. Conger, Ph. D., Instructor in Chemistry, University, of California, Berkeley, Cal. (52). 1906. C
Morgan, Wm. F., Short Hills, N. J. (27).
Morgan, Wm. Rogers, Newport, R. I. (57).
*Morley, Prof. Edward W., West Hartford, Conn. (18). 1876 BCE
Morrey, Charles B., Ohio State University, Columbus, Ohio. (48). F
*Morrill, Austin W., Ph. D., Orlando, Fla. (54). 1906. F
Morrill, C. V., Department Zoölogy, Columbia University, New York, N. Y. (56). F
Morris, Edward Lyman, 360 E. 22d St., Flatbush, Brooklyn, N. Y. (52). G
Morris, Frederick K., 2027 7th Ave., New York, N. Y. (58). E
Morris, Henry C., 4442 Grand Boulevard, Chicago, Ill. (58).
Morris, Henry L., 32 Liberty St., New York, N. Y. (49).
Morris, James Lucien, Instr. in Biology and Chemistry, Park College, Parkville, Mo. (58). C
Morris, Newbold, 52 E. 72d St., New York, N. Y. (49).
Morrison, Gilbert B., McKinley High School, St. Louis, Mo. (48). BCI
Morrison, Thomas, Diamond Bank Bldg., Pittsburg, Pa. (51). D
Morse, Prof. Albert P., 10 Upland Road, Wellesley, Mass. (50). F
*Morse, E. S., Salem, Mass. (18). 1874. FH
*Morse, Fred. W., Prof. of Organic Chemistry, New Hampshire College, Durham, N. H. (51). 1906. C
Morse, Max, College of City of New York, New York, N. Y. (51). F
Morse, Warner Jackson, Agric. Exper. Station, Orono, Me. (52). G
Morse, Willard S., Am. Smelting & Refining Co., Seaford, Delaware (50). CDE
Morton, George L., Room 322, Patent Office, Washington, D. C. (52). BD

Morton, Henry Sam'l, 141 Broadway, New York, N. Y. (57).

Moseley, Edward Augustus, Secretary Interstate Commerce Commission, 1113 16th St. N. W., Washington, D. C. (56). **D I**

*Moseley, Edwin L., A. M., High School, Sandusky, Ohio. (34). 1902. **G**

*Moser, Jefferson F., Captain, U. S. N., Retired, 74 Folsom St., San Francisco, Cal. (28). 1889. **E**

*Moses, Prof. Alfred J., Columbia University, New York, N. Y. (49). 1902. **E**

*Moses, Dr. Thomas F., Coaltham, Mass. (25). 1883. **F H**

Mosher, Charles D., care of Mosher Water Tube Boiler Co., 1 Broadway, New York, N. Y. (53). **D**

Mosman, Alonzo T., 1609 Beverly Road, Brooklyn, N. Y. (51). **D**

Mott, Howard S., 221 West 123d St., New York, N. Y. (57).

Motter, Murray Galt, M. D., 1841 Summit Ave., Lanier Heights, Washington, D. C. (51). **K**

*Mottier, David M., Ph. D., Professor of Botany, University of Indiana, Bloomington, Ind. (50). 1901. **F G K**

Moulton, Dudley, San Jose, Cal. (57).

*Moulton, Forest Ray, Ph. D., Instructor in Celestial Mechanics, University of Chicago, Chicago, Ill. (50). 1901. **A**

Moulton, Richard Green, 5053 Washington Ave., Chicago, Ill. (58).

Moulton, W. H., care Cleveland Cliffs Iron Co., Ishpeming, Mich. (53). **D**

Mount, William D., M. E., General Superintendent, Mathieson Alkali Works, Saltville, Va. (51). **D**

Moyer, J. Ambrose, University of Vermont, Burlington, Vt. (54). **D**

Moyer, Lycurgus R., C. E., Montevideo, Minn. (50). **G**

Muckenfuss, A. M., Professor of Chemistry, University of Mississippi, University, Miss. (52). **B C**

Mueller, Edward, Ph. D., Dept. of Chemistry, 1806 Locust St., St. Louis, Mo. (52). **C**

Muenchehofe, Carl Wilhelm Franz, M. D., Am. Museum of Nat'l History, New York, N. Y. (58). **K**

Muhlberg, William, M. D., 2617 Vine St., Cincinnati, Ohio. (57). **K**

*Muir, John, Martinez, Cal. (22). 1900. **G**

Mulford, Miss A. Isabel, McKinley High School, St. Louis, Mo. (45). **G**

*Mulliken, Samuel P., Mass. Inst. Technology, Boston, Mass. (43). 1899.

Muncaster, Stewart Brown, M. D., 907 Sixteenth St. N. W., Washington, D. C. (51). **K**

Munkwitz, Frank H., M. D., 1213-17 Wells Bldg., Milwaukee, Wis. (58). K

MUNN, JOHN P., 18 East 58th St., New York, N. Y. (57).

*Munro, John Cummings, M. D., Instructor in Surgery, Harvard Medical School, Boston, Mass. (50). 1906. F K

*MUNROE, PROF. C. E., George Washington University, Washington, D. C. (22). 1874. C

Munson, Joseph Theodore, 301 West Woodard St., Denison, Texas. (55). C E

Munson, W. H., Teacher of Zoology, State Normal School, Winona, Minn. (54). F

*Munson, Welton M., W. Va. Exper. Station, Morgantown, W. Va. (41). 1869. F G

*Munsterberg, Hugo, Harvard University, Cambridge, Mass. (47). 1898.

Murbach, Louis, 950 Cass Ave., Detroit, Mich. (54).

*Murdoch, John, Public Library, Boston, Mass. (29). 1886. F H

Murdock, George J., Mechanician and Inventor, 33 Wallace Place, Newark, N. J. (50). A D

*Murlin, John R., N. Y. Univ. Med. School, 338 E. 26th St., New York, N. Y. (54). 1906. K

Murphy, John B., M. D., 100 State St., Chicago, Ill. (58). K

Murray, Benjamin Lindley, Chemist, 770 St. Nicholas Ave., New York, N. Y. (57). C

*Murray, Daniel A., Ph. D., McGill University, Montreal, Canada. (47). 1899. A

*Musser, John H., M. D., 1927 Chestnut St., Philadelphia, Pa. (54). 1906. K

Myers, Edward W., 375 Arcade Bldg., Greensboro, N. C. (49).

*Myers, Geo. W., Ph. D., Professor of Mathematics and Astromony, University of Chicago, Chicago, Ill. (46). 1899. A

Myers, Nathaniel, 135 Central Park West, New York, N. Y. (57).

*Myers, William S., Director Chilean Nitrate Works, 12 John St., New York, N. Y. (43). 1898. C

*Nachtrieb, Henry F., Professor of Animal Biology, University of Minnesota, Minneapolis, Minn. (53). 1905. F

*Nagle, James C., Professor of Civil Engineering, A. and M. College, College Station, Texas. (40). 1893. B D

Nancrede, Charles Beylard, Prof. of Surgery, University of Mich., Ann Arbor, Mich. (54). K

Nash, Arthur Douglas, 280 State St., Flushing, L. I. (57). C

*Nash, Geo. V., 2587 Bainbridge Ave., New York, N. Y. (47). 1906. G

*Nason, Frank L., West Haven, Conn. (36). 1888. E

Nason, William A., M. D., Algonquin, Ill. (58).

*Neal, Herbert V., Knox College, Galesburg, Ill. (53). 1905. F
*Needham, Dr. James G., Lake Forest College, Lake Forest, Ill. (45). 1898. F
Needham, John B., Jr., Salem Public School, Salem, Mo. (54).
*Nef, J. U., University of Chicago, Chicago, Ill. (39). 1891. C
Neff, G. R., M. D., Farmington, Iowa. (58).
Neiler, Samuel Graham, Consulting and Designing Engineer, 1409 Manhattan Bldg., Chicago, Ill. (50). D
*Neill, Charles P., Chief, Bureau of Labor, Dept. of Commerce and Labor, Washington, D. C. (54). 1906. I
Neilson, John, Larchmont, New York. (57). A
Neilson, Walter Hopper, M. D., Ed. "Milwaukee Medical Journal," 114 Garfield Ave., Milwaukee, Wis. (51). K
*Nelson, Aven, Professor of Biology, University of Wyoming, Laramie, Wyoming. (50). 1903. G
*Nelson, Prof. A. B., Centre College, Danville, Ky. (30). 1882. A B D
*Nelson, Edward William, U. S. Dept. of Agriculture, Washington, D. C. (54). 1906. F
Nelson, James Allen, 210 Mitchell St., Ithaca, N. Y. (55). F
Nelson, N. L. T., Instructor in Botany, Central High School, St. Louis, Mo. (53). G
Nelson, Wm., Rooms 7 and 8, Paterson Natl. Bank, Paterson, N. J. (42).
Nesmith, Henry E., Jr., 28 South St., New York, N. Y. (30). B C F
Neu, Daniel Alfred. (55). G
*Newcomb, H. T., National Metropolitan Bank Bldg., Washington, D. C. (47). 1898. I
*Newcomb, Prof. S., 1620 P St. N.W., Washington, D. C. (13). 1874. A B
*Newcombe, Frederick Charles, 1021 E. University Ave., Ann Arbor, Mich. (43). 1896. G
*Newell, Wilmon, Secretary, Crop Pest Commission, Baton Rouge, La. (53). 1906. F G
Newkirk, Chauncey F., 2482 N. Hermitage Ave., Chicago, Ill. (58).
Newkirk, Johnson, Chief Chemist, General Chemical Co., Camden, N. J. (58). C
Newland, David Hale, A. B., Asst. State Geologist, State Museum, Albany, New York. (54). E
Newlands, James A., Chemist to State Board of Health, Middletown, Conn. (57). C K
Newman, H. H., Ph. D., Asst. Prof. of Zoology, Univ. of Michigan, Ann Arbor, Mich. (58). F
*Newsom, John F., Stanford University, Cal. (44). 1903. E

*Newson, Henry Byron, Associate Professor of Mathematics, University of Kansas, Lawrence, Kansas. (50). 1901. A

Nichols, Austin P., 4 Highland Ave., Haverhill, Mass. (37).

*Nichols, Ernest Fox, Columbia University, New York, N. Y. (41). 1893. B

*Nichols, E. L., Ph. D., Cornell University, Ithaca, N. Y. (28). 1881. B C

Nichols, Fred. R., Teacher of Physics, Richard T. Crane Manual Training High School, Chicago, Ill. (53). B

Nichols, M. Louise, Teacher Geography and Zoology, Phila. Normal School, 3207 Summer St., Phila., Pa. (54). E F

Nichols, Starr Hoyt, University Club, New York, N.Y. (57).

*Nichols, Walter S., 100 William St., New York, N. Y. (54). 1906. A B

*Nichols, Wm. H., 25 Broad St., New York, N. Y. (57). 1908. C

Nicol, Wm., Prof. of Mineralogy, School of Mining, Kingston, Ont, Can. (57). C E

Nicola, Frank F., Farmers Bank Bldg., Pittsburg, Pa. (50). D

Niles, Robert Lossing, 20 Broad St., New York, N. Y. (47). B C D

*Niles, Prof. Wm. H., Mass. Inst. Tech., Boston, Mass. (16). 1874. E

*Nipher, Prof. Francis E., Washington University, St. Louis, Mo. (24). 1876. B

Noble, Alfred, 315 5th Ave., New York, N. Y. (57).

Noble, Levi F., 192 Genesee St., Auburn, N. Y. (54). E

*Nolan, Edw. J., M. D., Acad. Nat. Sciences, Philadelphia, Pa. (29) 1890. F

Nolte, Lewis G., M. D., Senn's Block, Milwaukee, Wis. (51). K

Norbury, Frank Parsons, A. M., M. D., Jacksonville, Ill. (58). K

*Norris, Chas., M. D., 44 West 44th St., New York, N. Y. (57). 1908. K

*Norris, Harry W., Professor of Zoology, Iowa College, Grinnell, Iowa. (53). 1908. F

*Norris, James F., Prof. of Chemistry, Simmons College, Boston, Mass. (54). 1906. C

Norris, Rollin, Supt. of Works, United Gas Impt. Co., 917 Pine St., Philadelphia, Pa. (54). D I

Norsworthy, Naomi, Tutor in Psychology, Teachers College, Columbia University, New York, N. Y. (54). K

Norton, Prof. Arthur O., Harvard Univ., 17 Brewster St., Cambridge, Mass. (58).

Norton, A. Wellington, LL. D., Madison, S. Dak. (52). I

Norton, Jesse Baker, College of Agric., Cornell Univ., Ithaca, N. Y. (52). G

*Norton, J. B. S., College Park, Md. (47). 1899. G
*Norton, J. Pease, Yale Univ., New Haven, Conn. (57). 1907. I
*NORTON, THOMAS H., U. S. Consul, Chemnitz, Saxony, Germany. (35). 1887. C
*Norwood, Charles Joseph, Professor of Mining, State University of Kentucky, Lexington, Ky. (54). 1906. E
Notman, George, 99 John St., New York, N. Y. (57).
*Novy, Dr. Frederick G., Univ. of Michigan, Ann Arbor, Mich. (36). 1889. C
*Noyes, Prof. Arthur A., Mass. Inst. Technology, Boston, Mass. (45). 1897. C
Noyes, Isaac Pitman, 409 4th St. S. E., Washington, D. C. (49).
Noyes, La Verne, 130 Lake Shore Drive, Chicago, Ill. (58).
*Noyes, Wm. A., Univ. of Illinois, Urbana, Ill. (32). 1885. C
*Nunn, R. J., M. D., 5 York St., East, Savannah, Ga. (33). 1906. B H
Nutt, John Joseph, The Seminole, Broadway & 69th St., New York, N. Y. (57).
*Nuttall, Mrs. Zelia, Casa Alvarado, Coyoacan, D. F., Mexico. (35). 1887. H
*Nutting, Prof. Charles C., State University of Iowa, Iowa City, Iowa. (40). 1892. F
*Nutting, Perley Gilman, National Bureau of Standards, Washington, D. C. (53). 1906. A
Nylander, Olof O., R. F. D. 4, Caribou, Maine. (50). F
Nyswander, Reuben Edson, Jr., Ithaca, N. Y. (55). B
Oakes, F. James, 58 Stone St., New York, N. Y. (49).
Obear, G. B., Brown University, Providence, R. I. (54).
*Oberholser, Harry Church, U. S. Dept. Agriculture, Washington, D. C. (46). 1898. E F H
O'Brien, Mary Editha, 371 East Fort St., Detroit, Michigan. (58).
O'Byrne, Leo C., 996 Washington Boul., Chicago, Ill. (56). C D
Ochs, Adolph S., Times Bldg., Times Sq., New York, N. Y. (57).
O'Connor, Haldeman, 13 North Front St., Harrisburg, Pa. (51). H
Odenbach, Frederick L., S. J., Director Meteorological Observatory, St. Ignatius College, Cleveland, Ohio. (54). B E F
Oestlund, Oscar W., Ph. D., Asst. Prof. of Animal Biology, University of Minnesota, Minneapolis, Minn. (50). F
Oetinger, Dr. P. J., 621 Broadway, New York, N. Y. (57).
Ogden, Henry Vining, M. D., 141 Wisconsin St., Milwaukee, Wis. (51). F K
Ogden, Robert C., 125 East 56th Street, New York, N. Y. (57).
Ogden, Rollo, New York Evening Post, New York, N. Y. (57).

Ogilvie, Miss Ida Helen, Ph. D., Tutor in Geology, Barnard College, Columbia Univ., New York, N. Y. (51). E

Oglevee, Christopher S., Instructor in Biology, Lincoln College, Lincoln, Ill. (50). F

*O'Harra, Prof. Cleophas Cisney, State School of Mines, Rapid City, So. Dak. (49). 1908. E

*Ohlmacher, A. P., M. D., Director Biological Laboratory, Fred'k Stearns & Co., Detroit, Mich. (54). 1906. K

O'Kane, Henry, Wyandotte Bldg., Columbus, Ohio. (55). I

O'Keefe, Mary W., Throop School, Throop St., near 18th St., Chicago, Ill. (58).

Okerström, Albert, M. D., Port Wing, Wis. (57). K

Oldberg, Oscar, Prof. of Pharmacy and Applied Phar. Chemistry, Northwestern University, Chicago, Ill. (54). C

*Olds, George D., Dept. Mathematics, Amherst College, Amherst, Mass. (54). 1907. A

Oleson, Olaf M., Fort Dodge, Iowa. (53). CG

Olin, Stephen H., 34 Nassau St., New York, N. Y. (57).

*Oliphant, F. H., Geologist of South Penn. Oil Co., Oil City, Pa. (51). 1906. E

*Olive, Edgar W., South Dakota Agricultural Experiment Sta., Brookings, S. Dak. (48). 1903. G

*Oliver, Charles A., M. D., 1507 Locust St., Philadelphia, Pa. (54). 1905. K

Olmsted, John Charles, Landscape Architect, 16 Warren St., Brookline, Mass. (50). EI

*Olney, Louis Atwell, Professor of Chemistry, Lowell Textile School, 118 Riverside St., Lowell, Mass. (57). 1908. C

Olsen, Tinius, Manufacturer, 500 N. 12th St., Philadelphia, Pa. (51). D

Olson, David, Prof. of Geography, Stevens Point Normal School, Stevens Point, Wisconsin. (58). E

Olsson-Seffer, Pehr, Ph. D., Consulting Scientist, Tropical Agric. and Forestry, Apartado 133 Bis, Mexico City, Mexico. (55). CG

OLYPHANT, R. M. JR., 16 East 52d St., New York, N. Y. (57).

O'Malley, Thomas J., M. D., 447 East North Ave., Chicago, Ill. (58). K

Onderdonk, Henry U., M. D., Buffalo, Wyo. (51). GK

O'Neill, Edmond, Univ. of California, Berkeley, Cal. (57). C

Opdyke, William S., 20 Nassau St., New York, N. Y. (49).

*Orleman, Col. Louis H., Ph. D., Principal, Peekskill Military Academy, Peekskill, N. Y. (47). 1900.

Orr, Mary Moore, 102 Remson St., Brooklyn, N. Y. (57).

*Orr, William, Jr., 30 Firglade Ave., Springfield, Mass. (39). 1895. BF

*Ortmann, Arnold Edward, Ph. D., Curator of Invertebrate Zoology, Carnegie Museum, Pittsburg, Pa. (51). 1903. E

*Orton, Edward, Jr., The Normandie, Columbus, Ohio. (48). 1900. E

Orton, W. A., Div. of Veg. Phys. and Path., U. S. Dept. Agriculture, Washington, D. C. (49). G

Osborn, Frederick A., Professor of Physics, University of Washington, Seattle, Wash. (50). B

*Osborn, H. L., Professor of Zoology, Hamline University, St. Paul, Minn. (52). 1906. F

*Osborn, Henry F., Columbia University, New York, N. Y. (29). 1883. F

*Osborn, Herbert, Ohio State University, Columbus, Ohio. (32). 1884. F

Osborn, Wm. Church, 71 Broadway, New York, N. Y. (57).

*Osborne, George Abbott, Professor of Mathematics, Mass. Inst. of Technology, Boston, Mass. (50). 1903. A

Osborne, Loyall Allen, E. E., Mgr. of Works of Westinghouse Electric and Mfg. Co., Pittsburg, Pa. (50). D

*Osburn, Raymond Carroll, Department of Zoology, Columbia University, New York, N. Y. (50). 1906. F

Osgood, Alfred Townsend, M. D., 14 East 58th St., New York, N. Y. (57). K

Osgood, Joseph B. F., P. O. Box 212, Salem, Mass. (31).

*Osgood, Wilfred H., U. S. Department of Agriculture, Washington, D. C. (52). 1905. F

*O'Shea, Prof. M. V., Secretary of the Society of College Teachers of Education, University of Wisconsin, Madison, Wis. (53). 1907. I

O'Sullivan, Rev. Denis T., S. J., 761 Harrison St., Boston, Mass. (40). AB

Othmann, Henry I., 200 West 56th St., New York, N. Y. (56).

*Ott, Isaac, 18 N. 4th St., Easton, Pa. (54). 1906. K

*Overton, James Bertram, Ph. D., Instructor in Botany, Univ. of Wisconsin, Madison, Wis. (52). 1906. G

*Owen, Charles Lorin, Field Museum of Nat. History, Chicago, Ill. (50). 1902. H

Owen, Prof. D. A., Franklin, Ind. (34). E

*Owen, Miss Juliette A., 306 N. Ninth St., St. Joseph, Mo. (50). 1906. F

Owen, Miss Luella Agnes, 306 N. Ninth St., St. Joseph, Mo. (47). E

Owens, William Gundy, Professor of Chemistry and Physics, Bucknell University, Lewisburg, Pa. (50). B C

Pack, Fred J., Ph. D., F. R. S. G. S., Univ. of Utah, Salt Lake City, Utah. (54). E

Packard, George Arthur, Metallurgist and Mining Engineer, 18 Lafayette St., Wakefield, Mass. (50). E

Paddock, Eugene H., 149 West 72d St., New York, N. Y. (57).

*Paddock, Wendell, Botanist and Horticulturist, State Agricultural College, Fort Collins, Colo. (50). 1901. G

PAGE, CLARENCE V., Civil and Mining Engineer, P. O. Box 922, Butte, Montana. (51). D E

PAGE, DR. DUDLEY L., 46 Merrimack St., Lowell, Mass. (33). F

Page, Edward D., 60 Worth St., New York, N. Y. (57).

Page, Logan Waller, Department of Agriculture, Washington, D. C. (52). C

PAGE, MRS. NELLIE K., 46 Merrimack St., Lowell, Mass. (33). F

*Paine, Cyrus F., 242 East Ave., Rochester, N. Y. (12). 1874. A B

Paine, Ellery Burton, Asst. Prof. of Electrical Engineering, Univ. of Illinois, Urbana, Ill. (54). B D

Paine, Paul McClary. (53). E

*Paine, Robert Treat, President, Associated Charities of Boston, 6 Joy St., Boston, Mass. (50). 1903. I

Painter, Joseph H., U. S. National Museum, Washington, D. C. (54). G

*Palmer, Prof. Albert De Forest, Brown University, Providence, R. I. (47). 1900. B

*Palmer, Charles Skeele, Ph. D., care of J. P. Eustis Manuf. Co., 92–100 North St., Boston, Mass. (50). 1901. C

Palmer, Dr. Edward, Botanical Div., U. S. Dept. Agriculture, Washington, D. C. (22). H

Palmer, Ezra, M. D., 1 Van Buren Hall, Trinity Court, Boston, Mass. (51). K

Palmer, Irving A., 319 W. 9th St., Pueblo, Colo. (52). C

Palmer, Thomas Waverly, Pres. Ala. Girls' Industrial School, Montevallo, Ala. (55). A

Paltsits, Hon. Victor Hugo, State Historian, Box 57, Albany, N. Y. (51). H

*Pammel, L. H., Professor of Botany, Iowa State College, Ames, Iowa. (39). 1892. G

Pannenborg, John C., M. D., Hammond, Ind. (58). K

Parantand, A., 37 Murray St., New York, N. Y. (57).

Parham, Dr. F. W., 1429 Seventh St., New Orleans, La. (55). K

PARISH, HENRY, 52 Wall St., New York, N. Y. (49).

*Park, Roswell, M. D., 510 Delaware Ave., Buffalo, N. Y. (45). 1901. H K

*Park, William, Hallock M. D., 315 West 76th St., New York, N. Y. (51). 1903. K

*Parker, George Howard, Assistant Professor of Zoology, Harvard University, Cambridge, Mass. (50). 1901. F

*Parker, Herschel C., 21 Fort Greene Place, Brooklyn, N.Y. (43). 1900. C

Parker, William Lincoln, 312 Dartsmouth St., Boston, Mass. (50).

Parkhurst, John Adelbert, Instructor, Yerkes Observatory, Williams Bay, Wis. (58).

*Parks, C. Wellman, Civil Engineer, U. S. Navy Yard, Portsmouth, N. H. (50). 1897. D

Parmelee, Horatio P., 100 Monroe St., Grand Rapids, Mich. (42). E H

Parmelee, Linus S., B. S., 933 Grand Traverse St., Flint, Mich. (58). B C

Paroutand, A., 37 Murray St., New York, N. Y. (57).

*Parr, Samuel Wilson, Professor of Applied Chemistry, University of Illinois, Urbana, Ill. (55). 1908. C

Parsell, Henry V. A., 770 West End Ave., New York, N. Y. (49).

Parsons, Arthur L., Lecturer in Mineralogy, University of Toronto, Toronto, Ontario, Canada. (53). E

*Parsons, Prof. Charles Lathrop, Durham, N. H. (41). 1896. C

Parsons, Chas. W., 30 West 94th St., New York, N. Y. (57).

Parsons, Mrs. Edwin, 326 W. 90th St., New York, N. Y. (50).

Parsons, Hon. Herbert, House of Representatives, Washington, D. C. (57).

PARSONS, JOHN E., 111 Broadway, New York, N. Y. (36).

Pastorius, C. Sharpless, 415 N. Cascade Ave., Colorado Springs, Colo. (51).

Patch, Miss Edith M., Maine Agr. Exp. Sta., Orono, Me. (58).

*Paton, Stewart, M. D., 22 William St., New York, N. Y. (50). 1902. F K

Paton, Wm. Agnew, Room 30, 22 William St., New York, N. Y. (57).

Patrick, Edward T., Drawer C, Goldfield, Nev. (54). G I

Patrick, Frank, 3334 Balto. Ave., Kansas City, Mo. (50).

Patten, Frank Chauncy, Librarian, Rosenberg Library, Galveston, Tex. (53). I

Patten, Miss Jane Boit, South Natick, Mass. (55). G

PATTEN, JOHN, Patten Vacuum Ice Co. Ltd., 325 E. 97th St., New York, N. Y. (43).

Patten, Miss Juliet Craik, 2212 R St. N. W., Washington, D. C. (49). C F G

*Patterson, Andrew Henry, Prof. of Physics, Univ. of Georgia, Athens, Ga. (51). 1906. B

*Patterson, Austin M., Ph. D., Xenia, Ohio. (51). 1906. C
Patterson, Mrs. Flora Wambaugh, U. S. Dept. Agriculture, Washington, D. C. (44). G
*Patterson, Dr. George W., 814 S. University Ave., Ann Arbor, Mich. (44). 1896. B
*Patterson, Harry J., College Park, Md. (36). 1890. C
*Patterson, Prof. James L., Chestnut Hill, Philadelphia, Pa. (45). 1906.
Patterson, Stewart, 338 East Superior St., Chicago, Ill. (58).
Patthey, Henry L., 2622 Clinton Avenue, Minneapolis, Minn. (56).
Pattison, Chas. E., Fuller Bldg., 23d St. and Broadway, New York, N. Y. (57).
Pattison, Frank A., Consulting, Electrical and Supervising Engineer, Fuller Bldg., 23d St. and Broadway, New York, N. Y. (50). D
*Patton, Horace B., Professor of Geology and Mineralogy, Colorado School of Mines, Golden, Colo. (37). 1901. E
*Paul, Henry M., U. S. N., Naval Academy, Annapolis, Md. (33). 1885. A B
Paull, Leslie Fairbanks, Asso. Prof. of Horticulture, State Agric. College, Fort Collins, Colo. (54). G K
Pauls, Gustavus, St. Louis Altenheim, 5408–5450 S. Broadway, St. Louis, Mo. (53). G
*Payne, Bruce R., Ph. D., Professor of Education, University of Virginia, Charlottesville, Va. (55). 1907. I
Payne, Henry Mann, Ph. D., Prof. of Mining Engineering, University of West Virginia, Morgantown, W. Va. (58). E D
*Peabody, Charles, Ph. D., Instructor in Anthropology, Harvard University, Cambridge, Mass. (58). 1908. H
Peabody, Eunice D., 272 Prescott St., St. Paul, Minn. (58).
Peabody, George Foster, 2 Rector St., New York, N. Y. (50).
Peabody, Dr. Geo. Livingston, 57 West 38th St., New York, N. Y. (57). K
Peabody, Mary Brown, All Saints School, Sioux Falls, S. Dak. (52). F G
*Pearce, Edward D., Providence, R. I. (57). 1908. C
Pearce, James Edwin, Principal, Austin High School, 309 W. 10th St., Austin, Tex. (51). H
Pearce, Richard Mills, Jr., M. D., Director of Bender Laboratory, Professor of Pathology and Bacteriology, Albany Med. College, 222 State St., Albany, N. Y. (56). K
*Pearl, Raymond, Ph. D., Agric. Exper. Sta., Orono, Me. (53). 1905. F
Pearse, A. S., 19 Prentiss St., Cambridge, Mass. (54). F

Pearson, Fred. Stark, Consulting Engineer, 25 Broad St., New York, N. Y. (50). D

Pearson, Henry Carr, Prin. of Horace Mann School, 501 West 120th St., New York, N. Y. (58). L

*Pearson, Raymond A., Professor of Dairy Industry, Cornell University, Ithaca, N. Y. (49). 1901. I

Pease, Miss Clara A., Public High School, Hartford, Conn. (47). E

Pease, Estelle V., 312 Chicago Opera House Block, Chicago, Ill. (58).

Peattie, Mrs. Elia Wilkinson, 7670 Bond Bldg., Chicago, Ill. (58).

Peck, Charles E., 2 East 45th St., New York, N. Y. (57).

*Peck, Charles H., State Botanist, Geological Hall, Albany, N. Y. (52). 1906. G

*Peck, Frederick B., Lafayette College, Easton, Pa. (49). 1908. E

Peck, Mrs. John Hudson, 3 Irving Place, Troy, N. Y. (28).

Peck, W. A., C. E., 1643 Champa St., Denver, Colo. (19). E

*Peckham, Wm. Clark, Professor of Physics, Adelphi College, Brooklyn, N. Y. (54). 1906. A B

*Pedersen, Frederick Malling, D. Sc., 452 W. 144th St., New York, N. Y. (54). 1906. A B

Pedersen, James, 20 East 46th St., New York, N. Y. (57). K

Peed, Mansfield T., Professor of Mathematics and Astronomy, Emory College, Oxford, Ga. (53). A

Peet, Charles Emerson, Lewis Institute, Chicago, Ill. (58).

Peet, S. D., 438 57th St., Chicago, Ill. (58). H

*Pegram, G. B., Ph. D., Tutor in Physics, Columbia University, New York, N. Y. (52). 1905. B

*Pierce, B. Osgood, Harvard University, Cambridge, Mass. (47). 1898. B

*Peirce, B. Cyrus N., D. D. S., 3316 Powelton Ave., Philadelphia, Pa. (31). 1906. F

*Peirce, George James, Associate Professor of Plant Physiology, Stanford University, Cal. (44). 1897. G

Peirce, Harold, 222 Drexel Bldg., Philadelphia, Pa. (33). H I

Pember, Frederick R., B. Sc., Asst. Plant Physiologist, R. I. Agric. Exp. Sta., Kingston, R. I. (58). G C

*Pemberton, Henry, 1947 Locust St., Philadelphia, Pa. (54). 1906.

Pendleton, Edward Waldo, Penobscot Bldg., Detroit, Mich. (46). H I

Pendleton, F. K., 7 E. 86th St., New York, N. Y. (57).

*Penhallow, David Pearce, Professor of Botany, McGill University, Montreal, Canada. (54). 1907. G

Pennell, William W., M. D., 205 N. Main St., Mt. Vernon, Ohio (51). K

Penniman, George H., 1071 Fifth Ave., New York, N. Y. (46).

*Pennington, Miss Mary Engle, Ph. D., 405 Lancaster Ave., St. Davids, Pa. (47). 1900. C F G K

Pennypacker, James Lane, 614 Arch St., Philadelphia, Pa. (54).

Penrose, Charles B., M. D., 1720 Spruce St., Philadelphia, Pa. (51). B K

*Penrose, Dr. R. A. F., Jr., Ph. D., 460 Bullitt Building, Philadelphia, Pa. (38). 1890. E

Peppel, Samuel Veron, 1538 N. High St., Columbus, Ohio. (56). C

*Pepper, George H., Amer. Mus. Nat. History, Central Park, New York, N. Y. (48). 1900. H

Percy, J. F., M. D., Galesburg, Ill. (58). K

Perkins, Arthur, 14 State St., Hartford, Conn. (31). A B

*Perkins, Prof. Charles Albert, University of Tennessee, Knoxville, Tenn. (47). 1900. B D

Perkins, Edmund Taylor, U. S. Reclamation Service, 877 Federal Bldg., Chicago, Ill. (52). E

Perkins, Frank Walley, Asst. Supt., U. S. Coast and Geodetic Survey, Washington, D. C. (52). B

*Perkins, Prof. George H., Burlington, Vt. (17). 1882. E F H

Perkins, Henry Farnham, Ph. D., University of Vermont, Burlington, Vt. (52). F

Perkins, Wm. H., Park Ave. Hotel, New York, N. Y. (57).

*Perrine, C. D., Asst. Astronomer, Lick Observatory, Mt. Hamilton, Cal. (51). 1903. A

Perrine, Miss Lura L., 609 Normal Ave., Valley City, No. Dak. (47). E F G H

*Perry, Arthur C., 226 Halsey St., Brooklyn, N. Y. (43). 1896. A B

Perry, Chas. J., Astor House, New York, N. Y. (57).

Perry, Chas. M., Greene, R. I. (57). C

Perry, Thomas Sergeant, 41 Ave. de La Bourdounais, Paris, France. (50). I

Pershing, Howell T., M. D., 1169 Race St., Denver, Colo. (54). K

Peskind, Arnold, M. D., 2453 E. 55th St., Cleveland, Ohio. (51). K

Peter, Alfred Meredith, Chemist, Ky. Agricultural Experiment Station, 268 E. Maxwell St., Lexington, Ky. (57). C

*Peters, Amos W., Instructor in Zoology, University of Illinois, Urbana, Ill. (53). 1908. F

Peters, Prof. Clayton A., Polytechnic Preparatory School, 13th Ave. and 56th St., Brooklyn, N. Y. (46). G

*Peters, Edw. T., 3033 15th St. N. W., Washington, D C. (33). 1889. I
Peters, Wm. J., The Ontario, Washington, D. C. (57). B
Petersen, Niels Frederick, Sta. A, Lincoln, Neb. (50). I
Peterson, Cyrus A., M. D., 347 Church Ave., Webster Groves, Mo. (52). H
*Peterson, Frederick, M. D., 4 W. 50th St., New York, N. Y. (49). 1901. K
Peterson, O. A., Carnegie Museum, Pittsburg, Pa. (55). F
Pétre, Axel, P. O. Box 1606, Philadelphia, Pa. (48). D
*Petrunkévitch, Alexander, Ph. D., Short Hills, N. J. (54). 1906. F
*Pettee, Charles Holmes, Dean and Professor of Mathematics, New Hampshire College, Durham, N. H. (47). 1908. A
*Pettegrew, David Lyman, P. O. Box 75, Worcester, Mass. (44) 1906. A
Pettersen, C. A., 2395 Lowell Ave., Chicago, Ill. (52).
Pettit, R. H., Agricultural College, Mich. (56). F
Pfordte, Otto F., 15 Donaldson Ave., Rutherford, N. J. (57). E
Pharr, Henry Newton, Olivier, Louisiana. (55). C
Philips, Ferdinand, of Philips, Townsend & Co., Manufacturers, 505 N. 21st St., Philadelphia, Pa. (51). D
*Phillips, Prof. Andrew W., 90 High St., New Haven, Conn. (24). 1879.
Phillips, Edward F., Bur. of Entomology, Dept. of Agriculture, Washington, D. C. (58).
*PHILLIPS, PROF. FRANCIS C., BOX 126, Allegheny, Pa. (36). 1889. C
Phillips, John C., 299 Berkeley St., Boston, Mass. (52).
*Phillips, John Lloyd, State Entomologist, Blacksburg, Va. (52). 1906. F
Phillips, John S., 341 Fifth Ave., New York, N. Y. (46).
Phipps, Henry, 1063 Fifth Ave., New York, N. Y. (57).
PHIPPS, LAWRENCE COWLE, C. E., 1154 East Colfax Ave., Denver, Colo. (51). D
Pickel, Frank Welborn, Prof. of Biology, Univ. of Arkansas, Fayetteville, Ark. (51). G
*Pickering, Prof. Edward C., Director of Harvard Observatory, Cambridge, Mass. (18). 1875. A B
Pickett, Dr. Thomas E., Maysville, Ky. (25). F H
Pickett, William Douglas, 228 Campsie St., Lexington, Ky. (41). D I
Pierce, Miss Bessie Gillespie, 512 W. 11th St., Wilmington, Del. (54). C

PIERCE, NEWTON B., Pacific Coast Laboratory, U. S. Dept. Agriculture, Santa Ana, Cal. (49). 1901. G
Pierce, Dr. Norval H., 31 Washington St., Chicago, Ill (58). K
Pierce, Sloan J., Ph. B., R. F. D., No. 4, Warren, Ohio. (50). E
PIERREPONT, HENRY E., 216 Columbia Heights, Brooklyn, N. Y. (43).
Pierrepont, John J., 1 Pierrepont Place, Brooklyn, N. Y. (57).
*Piersol, George A., Professor of Anatomy, University of Pennsylvania, Philadelphia, Pa. (50). 1902. K
Pietrzycki, Marcel, M. D., Dayton, Wash. (51). K
Pike, Frank H., Univ. of Chicago, Chicago, Ill. (57). K
Pikler, A. H., care of Crocker-Wheeler Co., Ampere, N. J. (57).
Pilling, J. W., 1301 Massachusetts Ave., N. W., Washington, D.C. (40).
*Pillsbury, J. E., Captain U. S. N., The Highlands, Washington, D. C. (33). 1898. B E
*Pillsbury, John H., Prin. of Waban School, Waban, Mass. (23). 1885. F H
*Pinchot, Gifford, U. S. Dept. Agriculture, Washington, D. C. (47). 1899. G
Pinkerton, Andrew, Electrical Engineer, 1302 Farmers Bank Bldg., Pittsburg, Pa. (50). D
Pinkus, Fredk. S., 70 East 56 St., New York, N. Y. (57).
Pinney, Mrs. Augusta Robinson, 350 Central St., Springfield, Mass. (44). F G
*Piper, Charles V., U. S. Department of Agriculture, Washington, D. C. (53). 1905. G
Pitts, Thomas Dorsey, Earl Court, Baltimore, Md. (51). D
Plant, Albert, 28 East 76th St., New York, N. Y. (50).
Planten, J. R., Consul General, 9 Henry St., Brooklyn, N. Y. (57).
Plapp, Frederick Wm., 2549 N. 42d Ave., Irving Park Sta., Chicago, Ill. (52).
Plimpton, George Arthur, 70 5th Ave., New York, N. Y. (47).
Plowman, Amon Benton, Ph. D., Beaver College, Beaver, Pa. (50). B
Poats, T. G., Clemson Agric. College, Clemson College, S. C. (50). D
Pogue, Mary E., M. D., Lake Geneva, Wis. (58).
Pohlman, Augustus Grote, Bloomington, Ind. (58).
*Pohlman, Dr. Julius, 404 Franklin St., Buffalo, N.Y. (32) 1884. E F
Pole, Arminius C., M. D., 2038 Madison Ave., Baltimore, Md. (51). K
Polk, Wm. M., 7 East 36th St., New York, N. Y. (57).
Pollack, Francis D., 191 Palisade Ave., Yonkers, N. Y. (57).

*Pollard, Charles Louis, Curator S. I. Assoc. of Arts and Sciences, New Brighton, N. Y. (44). 1899. G

Pollitzer, Sigmund, A. M., M. D., 64 East 58th St., New York, N. Y. (55). K

Pollock, James Barkley, Asst. Prof. of Botany, Univ. of Michigan, Ann Arbor, Mich. (58). G

Pomeroy, Charles Taylor, 55 Broad St., Newark, N. J. (43).

*Pond, Francis J., Stevens Institute of Technology, Hoboken, N. J. (54). 1906. C

*Pond, G. G., Ph. D., Professor of Chemistry, Penn. State College, State College, Pa. (51). 1903. C

*Pond, Raymond Haines, Ph. D., Northwestern University Bldg., Chicago, Ill. (52). 1905. G

Pool, R. J., Instr. in Botany, University of Neb., Lincoln, Neb. (57). G

*Poor, Charles Lane, Professor of Astronomy, Columbia University, New York, N. Y. (55). 1907. A B

*Poor, John Merrill, Professor of Astronomy, Dartmouth College, Hanover, N. H. (52). 1906. A

*Porter, Albert B., 1024 Lake Shore Drive, Evanston, Ill. (53). 1906. B

Porter, H. Hobart, Consulting Electrical and Mechanical Engineer, 52 William St., New York, N. Y. (50). D

Porter, Henry K., Trustee of Carnegie Institute, 541 Wood St., Pittsburg, Pa. (50). D

Porter, J. Edward, Mfg. Chemist and Analyst, P. O. Box 785, Syracuse, N. Y. (50). C

Porter, James F., Hubbard Woods, Ill. (58).

Porter, Miles F., M. D., Fort Wayne, Ind. (58).

*Porter, Royal A., Instructor in Physics, Syracuse University, Syracuse, N. Y. (54). 1906. D

Porter, Thomas L., Evanston, Ill. (58). B D

Porter, Wm. Henry, M. D., 1674 Broadway, New York, N. Y. (57). K

*Porter, W. Townsend, M. D., Assistant Professor of Physiology Harvard Medical School, Boston, Mass. (50). 1901. F K

Portis, Milton Moses, B. S., M. D., 5045 Grand Boulevard, Chicago, Ill. (58). K

Posse, Baroness Rose, Posse Gymnasium, 206 Massachusetts Ave., Boston, Mass. (52).

*Post, Charles A., Astronomer, Bayport, Long Island, N. Y. (49). 1901. A

Poteat, Wm. L., Wake Forest, N. C. (47). F

Poth, Harry A., Technical Brewer, 216 N. 33d St., Philadelphia, Pa. (53). G

Potter, A. O., care of Bausch and Lomb Optical Co., 613 15th St., N. W., Washington, D. C. (56).

POTTER, BLANCH, 33 East 38th St., New York, N.Y. (57).

Potter, Richard B., M. D., West Palm Beach, Fla. (51). K

*Potter, William Bancroft, Chief Engineer, Ry. Dept. G. E. Co., Schenectady, N. Y. (50). 1906. D

*Potts, Louis Maxwell, Ph. D., Constructing Engineer, The Rowland Telegraphic Co., 107 E. Lombard St., Baltimore, Md. (54). 1906. D

*Pound, Roscoe, 87 E. Lake St., Chicago, Ill. (54). 1906.

Powel, Colonel de Veaux, 29 Broadway, New York, N. Y. (50).

Powell, Frederick James, 331 E. 17th St., New York, N. Y. (54). A B D

Powell, Thomas, M. D., 215–217 Laughlin Bldg., Los Angeles, Cal. (41).

Power, Frank W., Salem, Oregon. (57).

*Power, Frederick B., Ph. D., Director, The Wellcome Research Laboratories, 6 King St., Snow Hill, London, E. C., England. (31). 1887. C

*Powers, Le Grand, Bur. of the Census, Washington, D. C. (51). 1902. I

Praeger, William Emilius, 421 Douglas Ave., Kalamazoo, Mich (53). G

Prang, Louis, 45 Centre St., Roxbury, Mass. (29). D

Prather, John McClellan, Ph. D., Instructor in Biology, St. Louis High School, St. Louis, Mo. (52). F

Pratt, Alexander, Jr., Ph. D., 26 Bunnell St., Bridgeport, Conn. (50). H I

Pratt, Frederick Haven, Prince St., Jamaica Plain, Mass. (56).

Pratt, Henry Sherring, Ph. D., Prof. of Biology, Haverford Col., Haverford, Pa. (57). F

Pratt, John Francis, U. S. Coast and Geodetic Survey, Washington, D. C. (54). A

*Pratt, Joseph Hyde, Ph. D., N. C. Geological Survey, Chapel Hill, N. C. (49). 1902. E

Prentiss, Daniel Webster, M. D., 1315 M St. N. W., Washington, D. C. (50). F K

Prentiss, Henrietta, 328 N. Linn St., Iowa City, Iowa. (57).

*Prentiss, Robert W., Professor of Mathematics and Astronomy, Rutgers College, New Brunswick, N. J. (40). 1891. A

*Prescott, Samuel Cate, Instructor in Biology, Mass. Inst. Tech., Boston, Mass. (51). 1906. K

Price, Harvey Lee, Adjunct Professor of Horticulture, Agricultural Experiment Station, Blacksburg, Va. (52). G

Price, Robert Henderson, Willow View Farm, Long's Shop, Va. (50). F G

Price, Thomas Malcolm, U. S. Dept. of Agriculture, Washington D. C. (50). C

Priest, Henry, Ph. D., Dean of College of Letters and Sciences, St. Lawrence University, Canton, N. Y. (53). I

Prince, J. Dyneley, 15 Lexington Ave., New York, N. Y. (49).

*Prindle, Louis Marcus, Geological Survey, Washington, D. C. (55). 1908. E

Pritchard, Fred J., 530 East State St., Ithaca, N. Y. (56). G

Pritchard, Myron T., 125 School St., Roxbury, Mass. (52). E I

Pritchard, William Broaddus, M. D., 105 W. 73d St., New York, N. Y. (51). K

*Pritchett, Henry S., Carnegie Foundation, 576 5th Ave., New York, N. Y. (29). 1881. A

*Proctor, Chas. A., Department of Physics, University of Missouri, Columbia, Mo. (53). 1906. B

*Proctor, Miss Mary, 159 W. 46th St., New York, N. Y. (43). 1898. A

Proffitt, Max J., Gunnison, Colo. (55). F

*Prosser, Charles S., Ohio State Univ., Columbus, Ohio. (33). 1891. E F

Proudfit, Alexander Couper, 105 E 22d St., New York, N. Y. (47).

Prouty, William Frederick, Ph. D., Assistant State Geologist, Alabama, Assistant Professor of Geology, University of Alabama, University, Ala. (56). E

Provine, John William, Prof. Chemistry, Mississippi College, Clinton, Miss. (54). C

Pryer, Charles, P. O. Box 647, New Rochelle, N. Y. (49).

*Pupin, Dr. M. I., Columbia University, New York, N. Y. (44). 1896. B

*Purdue, Albert Homer, Professor of Geology, University of Arkansas, Fayetteville, Ark. (50). 1906. E

*Puryear, Chas., Professor of Mathematics, Agric. and Mech. College, College Station, Tex. (51). 1906. A

Pusey, Wm. Allen, M. D., 70 Madison St., Chicago, Ill. (54). B F G

Putnam, Chas. P., M. D., 63 Marlborough St., Boston, Mass. (28).

Putnam, Edward K., Acting Director, Davenport Academy of Sciences, Davenport, Iowa. (58).

Putnam, Miss Elizabeth D., Treasurer, Davenport Academy of Sciences, Davenport, Iowa. (45).

*Putnam, Prof. F. W., Peabody Museum, Cambridge, Mass. (10). 1874. H

Putnam, Geo. Rockwell, U. S. Coast and Geodetic Survey, Washington, D. C. (57).

Putnam, Henry St. Clair, 100 Broadway, New York, N. Y. (47).

Pyle, William Henry, 138 Giles St., Ithaca, N. Y. (53). I

Quackenbos, John D., M. D., 331 W. 28th St., New York, N. Y. (49).

*Quaintance, A. L., U. S. Department of Agriculture, Washington, D. C. (51). 1903. F

Quayle, H. J., Univ. of California, Berkeley, Cal. (55). F

QUINAN, WILLIAM RUSSELL, Gen. Mgr. "Cape Explosives Works, Ltd.," Dynamite Factory, West Somerset, Cape Colony, South Africa. (56). C

Raht, A., 71 Broadway, New York, N. Y. (57). C E

RAHT, CHARLES, P. O. Box 828, New York, N. Y. (57).

Rainey, Prof. Frank Lewis, S. B., Prof. of Biology, Parsons College, Fairfield, Iowa. (58). F K

*Ramaley, Francis, University of Colorado, Boulder, Colo. (45). 1899. G

Rambaud, George Gibier, M. D., New York Pasteur Inst., West 23d St., New York, N. Y. (58). K

*Ramsey, Rolla Roy, Associate Professor of Physics, Indiana University, Bloomington, Ind. (50). 1906. B

Ramsperger, Gustav, 334 Central Park, West, New York, N.Y. (57).

Ranck, Samuel Haverstick, Librarian, Public Library, Grand Rapids, Mich. (54). I

Rand, C. F., M. D., 1228 15th St. N. W., Washington, D. C. (27). E H

*Rand, Herbert Wilbur, Ph. D., Instructor in Zoology, Harvard University, Cambridge, Mass. (51). 1905. F

Randall, B. Alexander, M. D., 1717 Locust St., Philadelphia, Pa. (51). K

Randall, Frank E., 444 Park Ave., New York, N.Y. (57).

Randall, Prof. Otis E., Brown Univ., Providence, R. I. (57). D

Randolph, Beverley S., Civil and Mining Engineer, Berkeley Springs, West Va. (50). D E

*Rane, F. Wm., New Hampshire Agric. Exper. Station, Durham, N. H. (42). 1900. G

Rankin, H. D., Presdt., Rankin Reduction Co., 708 Railroad St., Joliet, Ill. (54). B C

*Rankin, Walter M., Professor of Invertebrate Zoology, Princeton University, Princeton, N. J. (51). 1905. F

Ransohoff, Joseph, M. D., F. R. C. S., Cincinnati, Ohio. (51). K

Ranson, Brayton H., Chief Div. of Zoology, Bur. of Animal Industry, Washington, D. C. (57). F

Ransom, Charles C., M. D., 66 West 49th St., New York, N. Y. (58). K

Ransom, James Harvey, Ph. D., Assoc. Prof. Chemistry, Purdue Univ., West Lafayette, Ind. (54). C

*Ransome, Frederick Leslie, Ph. D., U. S. Geological Survey, Washington, D. C. (52). 1903. E

Rathborne, Richard Chas., 22 W. 9th St., New York, N. Y. (57).
Rathbun, John Charles, Tung Wen Institute, Amoy, China. (53). A
*Rathbun, Miss Mary J., U. S. Nat'l Museum, Washington, D. C. (52). 1906. F
*Rathbun, Richard, Smithsonian Institution, Washington, D. C. (40). 1892. F
Rau, Albert George, Principal Moravian Parochial School, 63 Broad St., Bethlehem, Pa. (50). B E
Raycroft, Joseph E., M. D., University of Chicago, Chicago, Ill. (58). K
Raymer, George Sharp, Rotch Bldg., Cambridge, Mass. (50). D E
Raymond, Daniel V., 59 Cedar St., New York, N. Y. (57).
Raymond, Howard M., Dean Armour Inst. of Technology, Chicago, Ill. (58).
Raymond, Percy E., Carnegie Museum, Pittsburg, Pa. (57). E
*Raymond, Rossiter W., 29 W. 39th St., New York, N. Y. (15). 1875. E I
*Raymond, William G., Professor of Civil Engineering, State University of Iowa, Iowa City, Iowa. (44). 1896. D
Rea, Paul M., The Charleston Museum, Charleston, S. C. (53). E F
*Read, Edmund E., Jr., 604 Cooper St., Camden, N. J. (54). 1906. A
Read, Mrs. Robert M., 399 High St., West Medford, Mass. (57).
Read, Thomas T., Ph. D., 97 Monmouth St., Redbank, N. J. (57). D E
Reade, John Moore, Univ. of Georgia, Athens, Ga. (56). G
Reagan, Albert B., Indian School Service, La Push, Wash. (53). E
Reche, Miss Eugénie M., 31 Howell St., Rochester, N. Y. (41). E H
Reckefus, Chas. H., Jr., M. D., 506 N. 6th St., Philadelphia, Pa. (51). K
Reddick, Donald, Assistant in Mycology, Cornell University, 804 Seneca St., Ithaca, N. Y. (56). G
*Reed, Charles J., 3313 N. 16th St., Philadelphia, Pa. (34). 1903. B C
Reed, Frank Walker, Instr. in Astronomy, Univ. of Illinois, Urbana, Ill. (58). A
Reed, Howard Sprague, Ph. D., Bureau of Soils, Dept. Agriculture, Washington, D. C. (53). G
*Reed, Hugh D., Ph. D., Instructor, Dept. of Neurology, Vertebrate Zoology and Physiology, Cornell University, Ithaca, N. Y. (49). 1906. F
*Reed, John O., 907 Lincoln Ave., Ann Arbor, Mich. (44). 1898. B.

*Reese, Albert Moore, Ph. D., Prof. of Zoology, W. Va. Univ., Morgantown, W. Va. (52). 1906. F

*Reese, Dr. Charles L., 1020 Jackson St., Wilmington, Del. (39). 1892. C

*Reese, Herbert M., 701 Maryland Place, Columbia, Mo. (49). 1906. B

Reeves, Geo. I., Pullman, Washington. (57). F

*Reichmann, Fritz, Physical Laboratory, W. and L. E. Gurley, Troy, N. Y. (54). 1906. B

*Reid, Harry Fielding, Johns Hopkins University, Baltimore, Md. (36). 1893. B

*Reid, Hon. Whitelaw, 451 Madison Ave., New York, N. Y. (50). 1901. I

Reifsnyder, Samuel K., 705 Bond St., Asbury Park, N. J. (50). I

Reigart, John Franklin, 31 Euclid Ave., Yonkers, N. Y. (53). I

*Reighard, Jacob, Prof. of Zoology, Univ. of Michigan, Ann Arbor, Mich. (51). 1903. F

Reist, Henry G., Mechanical and Electrical Engineer, 5 South Church St., Schenectady, N. Y. (50). D

*Remington, Prof. Joseph Prioe, Phila. College of Pharmacy, 1832 Pine St., Philadelphia, Pa. (54). 1906. K

*Remsen, Ira, President Johns Hopkins University, Baltimore, Md. (22). 1875. C

Rennert, Rosina J., 366 West 120th St., New York, N. Y. (57).

Renninger, John S., M. D., Marshall, Minn. (31). C F

Rew, Irwin, 1128 Ridge Ave., Evanston, Ill. (58).

Reynolds, Dr. Frederick G., Instr. in Mathematics, College of City of New York, New York, N. Y. (58). A

Reynolds, George, P. O. Box B, Salt Lake City, Utah. (44). H

Rhein, Meyer L., M. D., D. D. S., 38 E. 61st St., New York, N. Y. (57). K

*Rhodes, James Ford, Author and Historian, 392 Beacon St., Boston, Mass. (50). 1903. I

*Rice, Edward L., Ph. D., A. B., Ohio Wesleyan University, Delaware, Ohio. (43). 1905. F

Rice, Edwin Wilbur, Jr., General Electric Co., Schenectady, N. Y (50). D

*Rice, Martin Everett, Asst. Professor of Physics and Electrical Engineering, University of Kansas, Lawrence, Kans. (50). 1906. B D

*Rice, Prof. W. North, Wesleyan University, Middletown, Conn. (18). 1874. E F

Rich, Michael P., M. D., 50 W. 38th St., New York, N. Y. (40). K

*Richards, Prof. Charles B., 227 Edwards St., New Haven, Conn. (33). 1885. D

*RICHARDS, EDGAR, 60 Ayrault St., Newport, R. I. (31). 1886. C

*Richards, Herbert Maule, Ph. D., Instructor in Botany, Barnard College, Columbia University, New York, N. Y. (51). 1902. G

*Richards, Prof. Robert H., Mass. Institute of Technology, Boston, Mass. (22). 1875. D

*Richards, Mrs. Robert H., Mass. Institute of Technology, Boston, Mass. (23). 1878. C

*Richards, Prof. Theodore William, Harvard University, Cambridge, Mass. (47). 1899.

Richardson, B. C., 536 East 7th St., Alton, Ill. (58).

Richardson, Major Charles A., Canandaigua, N. Y. (50). I

*Richardson, Charles Henry, Ph D., Syracuse Univ., Syracuse, N. Y. (47). 1906. CE

Richardson, Charles Williamson, M. D., 1317 Connecticut Ave. N. W. Washington, D. C. (49). K

*Richardson, Clifford, Proprietor, N. Y. Testing Lab., Cortlandt Bldg., 30 Church St., New York, N. Y. (30). 1884. C

*Richardson, G. B., U. S. Geological Survey, Washington, D. C. (55). 1907. E

*Richardson, Miss Harriet, 1864 Wyoming Ave., Washington, D. C. (49). 1903. F

*Richardson, Mark Wyman, M. D., 90 Equitable Building, Boston, Mass. (51). 1903. K

Richardson, Roy S., Ph. M., 387a McDonough St., Brooklyn, N. Y. (58).

Richardson, Russell, 61 Brook Street, Brookline, Mass. (58). K

*Richardson, W. D., care Swift & Co., Chicago, Ill. (56). 1908. C

Richardson, Wm. D., P. O. Box 185, Fredericksburg, Va. (52). CF

Richey, Stephen O., Ph. D., 10 Lafayette Square, Washington, D. C. (54).

Richmond, William Henry, Richmond Hill, Scranton, Pa. (50) DE

*Rickard, T. A., Editor of Mining and Scientific Press, 330 Market St., San Francisco, Cal. (50). 1906. DE

Ricker, Maurice, Principal, West High School, Des Moines, Iowa. (50). F

*Ricker, N. Clifford, D. Arch., Dean, College of Engineering, University of Illinois, Urbana, Ill. (50). 1906. D

*Ricker, Percy Leroy, Department of Agriculture, Washington, D. C. (52). 1906. G

Ricketts, Howard Taylor, Zoology Bldg., Univ. of Chicago, Chicago, Ill. (58). F

Ricketts, Louis D., Consulting Mining Engineer, Cananea, Sonora, Mexico. (50). E

*Ricketts, Palmer C., President Rensselaer Polytechnic Institute, Troy, N. Y. (33). 1887. A D

*Ricketts, Prof. Pierre de Peyster, 104 John St., New York, N. Y. (26). 1880. C D E

Ricketts, Col. R. Bruce, Wilkesbarre, Pa. (33). E

Ridder, Herman, N. Y. Staats Zeitung, 182 William St., New York, N. Y. (57).

Riddle, Lincoln Ware, Ph. D., Instructor in Botany, Wellesley College, Wellesley, Mass. (52). G

Riddle, Oscar, Ph. D., Hayes Hotel, 64th St. and Lexington Ave., Chicago, Ill. (58). F

Ries, Elias E., E. E., 116 Nassau St., New York, N. Y. (33). B D I

Ries, Emil, M. D., 100 State St., Chicago, Ill. (58). K

*Ries, Heinrich, Ph. B., Ithaca, N. Y. (41). 1898. E

Riesman, David, M. D., 1624 Spruce St., Philadelphia, Pa. (51). K

*Rietz, Henry Lewis, University of Illinois, Urbana, Ill. (51). 1906. A

*Riggs, Norman Colman, Assoc. Prof. Mathematics, Armour Inst. of Tech., Chicago, Ill. (54). 1907. A

*Riggs, Robert Baird, Ph. B., Professor of Chemistry, Trinity College, Hartford, Conn. (50). 1901. C

Riker, Clarence B., Maplewood, N. J. (52). F

Riker, Samuel, 27 E. 69th St., New York, N. Y. (50).

Riley, Cassius M., Professor of Chemistry, Barnes Medical College and Barnes College of Pharmacy, St. Louis, Mo. (53). C

Riley, C. F. Curtis, Prof. Biology and Curator of Museum, State Normal School, Mankuto, Minn. (57).

*Riley, Isaac Woodbridge, Ph. D., Faculty Club, Columbia Univ., New York, N. Y. (52). 1903. H I

*Riley, William Albert, Ph. D., Asst. Prof. of Entomology, Cornell University, Ithaca, N. Y. (54). 1908. F

Rissmann, Otto. (50). D E

Ritchie, Craig D., Conveyancer, 414 N. 34th St., Philadelphia, Pa. (51).

*Ritter, William Emerson, Associate Professor of Zoology, University of California, Berkeley, Cal. (50). 1901. F

Roark, Ruric Nevel, Pres. Eastern Ky. State Normal School, Richmond, Ky. (54). H

Robb, Hunter, M. D., 702 Rose Building, Cleveland, Ohio. (51). K

Robb, J. Hampden, 23 Park Ave., New York, N. Y. (50).

Robbins, Harriet L., 35 West 48th St., New York N.Y. (57).

Robert, Henry Martyn, Brig-Gen., U. S. A., Retired, Owego, N. Y. (54). **D I**

ROBERT, SAMUEL, 906 Park Ave., New York, N. Y. (57).

Roberts, Chris. H., 10 Washington Place, New York, N. Y. (57).

Roberts, Hon. George E., Pres., Commercial Nat'l Bank, Chicago, Ill. (58). **I**

Roberts, H. L., State Normal School, Cape Girardeau, Mo. (52). **F**

Roberts, John Bingham, M. D., 313 South 17th St., Philadelphia, Pa. (55). **K**

Roberts, John M., Secy., Central Scientific Co., 14–28 Michigan St., Chicago, Ill. (58).

Roberts, Milnor, Professor of Mining and Metallurgy, University of Washington, Seattle, Wash. (50). **D E**

Roberts, Thomas Paschall, Civil Engineer, 361 North Craig St., Pittsburg, Pa. (51). **D**

Roberts, Wm. F., 730 15th St., Washington, D. C. (52). **F I**

Robertson, Alice, Ph. D., Instructor in Zoology, Wellesley College, Wellesley, Mass. (54). **F**

*Robertson, Charles, Carlinville, Ill. (53). 1906. **F**

Robinovitch, Louise G., M. D., 28 West 126th St., New York, N. Y. (57). **K**

*Robinson, Benjamin Lincoln, Curator, Harvard Herbarium, Cambridge, Mass. (41). 1893. **G**

*Robinson, Mrs. Daisy M. Orleman, M. D., 159 W. 49th St., New York, N. Y. (40). 1897. **F K**

*Robinson, Prof. Franklin C., Bowdoin College, Brunswick, Me. (29). 1889. **C D**

*Robinson, Otis Hall, Professor of Natural Philosophy, University of Rochester, Rochester, N. Y. (23). 1901. **A B**

Robinson, Samuel Adams, M. D., Crozet, Va. (51). **H I K**

Robinson, Sanford, C. E., E. M., 945 W. Jefferson St., Los Angeles, Cal. (50). **D**

*Robinson, Prof. Stillman W., 1353 Highland St., Columbus, Ohio. (30). 1883. **A B D**

Robinson, Miss Winifred J., Instructor in Botany, Vassar College, Poughkeepsie, N. Y. (55). **G**

Robison, Dr. John A., 152 Kennesaw Terrace, Chicago, Ill. (58).

Robison, Wm., 18 Wall St., New York, N. Y. (57).

Rochester, DeLancey, M. D., 469 Franklin St., Buffalo, N. Y. (35). **F K**

Rockey, A. E., M. D., 778 Flanders St., Portland, Oregon. (51). **K**

Rockwell, Geo. W., 833 East Exchange St., Akron, Ohio. (57).

*Rockwood, Prof. Charles G., Jr., 34 Bayard Lane, Princeton, N. J. (20). 1874. **A B D E**

*Rockwood, Elbert W., Professor of Chemistry and Toxicology, College of Medicine, State University of Iowa, Iowa City, Iowa. (50). 1906. C F K

Roddy, H. Justin, Prof. of Geology and Geography, State Normal School, Millersville, Pa. (57). E

*Roe, Edward Drake, Jr., Professor of Mathematics, Syracuse University, Syracuse, N. Y. (50). 1906. A

Roehr, C. G., M. D., 833 W. Division St., Chicago, Ill. (58). K

Roessler, Franz, 39 High St., Perth Amboy, N. J. (39).

*Roever, William Henry, Mass. Inst. Technology, Boston, Mass. (53). 1906. A

Rogers, Miss Anne Fuller, 126 Newbury St., Boston, Mass. (52). F

Rogers, Chas. Gardner, Ph. D., Syracuse University, Syracuse, N. Y. (57). F

Rogers, Howard J., Department of Education, Albany, N. Y. (52).

Rogers, Hubert E., 1 West 72d St., New York, N. Y. (57).

*Rolfs, H., Gainesville, Fla. (41), 1899. G

*Rominger, Dr. Carl, Ann Arbor, Mich. (21). 1879. E

Rood, James Theron, B. S., Ph. D., Prof. of Physics and Electrical Engineering, University of Alabama, University Ala. (58). A B D

Roosevelt, W. E., P. O. Box 1222, New York, N. Y. (57).

*Root, Hon. Elihu, Secretary of State, 1500 R. I. Ave., Washington, D. C. (50). 1901. I

Rorer, James Birch, Bureau of Plant Industry, U. S. Dept. Agric., Washington, D. C. (51). G

*Rorer, Jonathan T., Ph. D., Central High School, Philadelphia, Pa. (47). 1906. A L

*Rosa, Edward Bennett, Bureau of Standards, Washington, D. C. (39). 1892. A B

*Rose, Joseph Nelson, U. S. National Museum, Washington, D. C. (52). 1905. G

*Rosenau, Milton J., M. D., Director Hygienic Laboratory, U. S. Public Health and Marine Hospital Service, Washington, D. C. (51). 1906. K

Rosenbloom, Jacob, B. S., care of Livingston Hall, Amsterdam Ave. and 115th St., New York, N. Y. (57). C K

Rosendahl, C. Otto, University of Minnesota, Minneapolis, Minn. (58).

Rosenfeld, Arthur H., State Crop Pest Comm., Baton Rouge, La. (57). F

*Ross, Bennett Battle, Professor of Chemistry, Alabama Polytechnic Institute, Auburn, Ala. (45). 1906. C

*Ross, Denman Waldo, Ph. D., 24 Craigie St., Cambridge, Mass. (29). 1906.

Ross, W. A., 11 S. William St., New York, N. Y. (57).
*Rotch, A. Lawrence, 1124 Board of Trade Bldg., 131 State St., Boston, Mass. (39). 1896. B
*Rotch, T. M., M. D., 197 Commonwealth Ave., Boston, Mass. (51). 1906. K
Roth, Filibert, University of Michigan, Ann Arbor, Mich. (39). F
Rothermel, John G., Superintendent, Wagner Free Institute of Science, Philadelphia, Pa. (53).
Rothermel, John J., Teacher of Physics, Eastern High School, Washington, D. C. (51). B
*Rothrock, David A., Prof. of Mathematics, Univ. of Indiana, Bloomington, Ind. (58). 1908. A
Rothschild, Jacob, Hotel Majestic, New York, N. Y. (50).
*Rotzell, W. E., M. D., 200 S. 40th St., Philadelphia, Pa. (45). 1906. F H K
Rouse, B. Irving, 981 Lake Ave., Rochester, N. Y. (57). E
Rowe, Jesse Perry, Professor of Physics and Geology, University of Montana, Missoula, Mont. (52). B E
*Rowlee, W. W., Prof. of Botany, Cornell Univ., Ithaca, N. Y. (41). 1894. G
*Roy, Arthur J., C. E., Dudley Observatory, Albany, N. Y. (50). 1908. A
Royce, Josiah, Harvard Univ., Cambridge, Mass. (57). H
Rubovits, Toby, 319–327 Fifth Ave., Chicago, Ill. (58).
Rucker, Miss Augusta, University of Texas, Austin, Tex. (51).
Rudisch, Julius, M. D., 39 E. 63d St., New York, N. Y. (57). K
*Ruedemann, Rudolf, Ph. D., Asst. State Paleontologist, 161 Yates St., Albany, N. Y. (52). 1906. E F
Ruediger, Gustav F., Prof. of Bacteriology and Pathology, Univ. of North Dakota, Grand Forks, N. Dak. (58). K
Ruffin, Sterling, M. D., Professor of Theory and Practice of Medicine, George Washington University, Washington, D. C. (52). K
Rugan, H. F., Tulane University, New Orleans, La. (55). D
Ruger, Henry A., Prof. of Psychology, Colorado College, Colorado Springs, Colo. (54). H K
Ruland, M. A., 53 Linden Ave., Flatbush, Brooklyn, N. Y. (43).
Rumbold, Miss Caroline Thomas, 3321 Washington Ave., St. Louis, Mo. (53). G
Rummler, William R., 1400 Tribune Bldg., Chicago, Ill. (58).
*Running, Theodore R., Ph. D., Dept. of Engineering, Univ. of Michigan, Ann Arbor, Mich. (50). 1906. A
Rupp, August, A. B., College of City of New York, New York, N. Y. (35).
Ruppersburg, Miss Emma A., 842 So. High St., Columbus, Ohio (48). B

*Rusby, Henry H., M. D., 115 West 68th St., New York, N. Y. (36). 1890. G K

Rusk, Glanville Y., M. D., N. Y. Pathological Institute, Wards Island, New York, N. Y. (54). K

Rusk, W. J., Dept. of Math. and Astronomy, Iowa College, Grinnell, Iowa. (57). A

*Russell, A. H., Lieut. Col., U. S. A., Ordnance Office, War Dept., Washington, D. C. (38). 1906. D

*Russell, Prof. H. L., University of Wisconsin, Madison, Wis. (41). 1894. G

*Russell, Henry Norris, 79 Alexander St., Princeton, N. J. (54). 1906. A

*Russell, James E., Dean of Teachers College, West 120th St., New York, N. Y. (50). 1901. H I

Russell, Janet L., 329 W. 83d St., New York, N. Y. (57).

Russell, John B., Superintendent of Schools, Wheaton, Ill. (51). C

Russell, Thomas Hubbard, M. D., New Haven Hospital, 137 Elm St., New Haven, Conn. (54). K

Ruthven, Alex. G., Curator, University Museum, University of Michigan, Ann Arbor, Mich. (54). F

*Rutter, Frank Roy, Ph. D., 19 Lunhan Road, Norwood, London, S. E., England. (47). 1900. I

*Ryan, Harris J., Stanford University, Cal. (38). 1890. B

*Rydberg, Dr. Per Axel, N. Y. Botanical Garden, Bronx Park, New York, N. Y. (49). 1901. G

Ryerson, John A., 383 Superior St., Chicago, Ill. (58).

Ryerson, Martin A., Com. Exchange Bank Bldg., Chicago, Ill. (58).

Sabin, Florence R., M. D., Johns Hopkins Med. School, Wolfe and Monument Sts., Baltimore, Md. (57). K

*Sabine, Wallace Clement, 40 Shepard St., Cambridge, Mass. (47). 1900. B

*Sachs, B., M. D., 21 E. 65th St., New York, N. Y. (49). 1903. K

Sachs, Prof. Julius, Teachers College, Columbia University, New York, N. Y. (58). L

Sackett, Miss Eliza D., Cranford, N. J. (35).

Sackett, Robert L., C. E., Purdue Univ., Lafayette, Ind. (50). D

Sackett, Walter George, Bacteriologist, Agri. Exp. Station, Fort Collins, Colo. (52). F G

Sadler, William S., M. D., 100 State St., Chicago, Ill. (58). K

*Sadtler, Saml. P., Ph. D., LL.D., Consulting Chemist, N. E. corner Tenth and Chestnut Sts., Philadelphia, Pa. (51). 1903. C

*Saegmuller, G. N., 613 15th St. N. W., Washington, D. C. (38). 1891. A B

*Safford, Frederick Hollister, Ph. D., Instr. in Math., University of Pennsylvania, Philadelphia, Pa. (54). 1906. A

Safford, William Edwin, Dept. Agriculture, Washington, D. C. (55). G

*Sage, John Hall, Portland, Conn. (23). 1906. F

*St. John, Prof. Charles E., Dept. Physics and Astronomy, Oberlin College, Oberlin, Ohio. (46). 1900. B

St. John, Howell W., P. O. Box 913, Hartford, Conn. (49). I

*Sajous, Charles Euchariste de Médicis, M. D., 2043 Walnut St., Philadelph a, Pa. (54). 1906. K

Salant, William, M. D., 437 West 59th St., New York, N. Y. (56). K

Salathé, Frederick, Ph. D., 822 East Third St., Los Angeles. Cal. (51). C

*Salisbury, Prof. R. D., Chicago University, Chicago, Ill. (37). 1890. B E

Salisbury, Sam'l Henry, Jr., 16 Miller St., Seneca Falls, N. Y. (57). C

*Salmon, Dr. Daniel E., Univ. of Montevideo, Montevideo, Uruguay, S. A. (31). 1885. F

Salter, Dr. Allen, Lena, Ill. (58). K

Sander, Enno, Ph. D., 2801–2811 Lawton Ave., St. Louis, Mo. (27). C

Sanders, James G., U. S. Dept. Agriculture, Washington, D. C. (54). F

*Sanderson, E. Dwight, Agr. Exp. Sta., Durham, N. H. (50). 1903. F

Sando, Will J., care Allis-Chalmers Co., Milwaukee, Wis. (51). E

Sandsten, E. P., Prof. of Horticulture, Univ. of Wisconsin, Madison, Wis. (54).

Sanes, K. I., M. D., 1636 5th Ave., Pittsburg, Pa. (51). K

*Sanford, Edmund C., 24 Richards St., Worcester. Mass. (49). 1902. H K

*Sanford, Fernando, Professor of Physics, Leland Stanford Jr. Univ., Stanford University, Cal. (50). 1901. B

Sanford, Samuel, U. S. Geol. Survey, Washington, D. C. (58).

[Sang, Alfred, Bailey-Farrell Bldg., Pittsburg, Pa. (58). D C

Sanger, Frank Dyer, M. D., 525 N. Charles St., Baltimore, Md. (57). K

*Sardeson, Frederick William, Ph. D., Instructor in Geology, University of Minnesota, Minneapolis, Minn. (50). 1906. E

Sargent, Ara Nathaniel, M. D., 116 Federal St., Salem, Mass. (51). K

*Sargent, Dudley Allen, M. D., Director, Hemenway Gymnasium, Harvard University, Cambidge, Mass. (47). 1899. H

Sargent, Frederick Le Roy, 27 Everett St., Cambridge, Mass. (54). G

Sargent, Homer E., Lakota Hotel, Chicago, Ill. (58).
Sargent, Winthrop, Haverford, Pa. (54). D
Sarle, Clifton J., El Paso, Texas. (55). E
Sasscer, E. R., Bur. of Entomology, U. S. Dept. of Agriculture, Washington, D. C. (58).
Satterlee, F. LeRoy, M. D., 6 W. 56th St., New York, N. Y. (50). F K
Satterthwait, Alfred F., Asst. Zoologist, Harrisburg, Pa. (57). F
*Saunders, A. P., Ph. D., Hamilton College, Clinton, N. Y. (48). 1900. C
*Saunders, Charles E., Ph. D., Central Experimental Farm, Ottawa, Canada. (41). 1895. G
Saunders, Edward W., M. D., 3003 Lafayette Ave., St. Louis, Mo. (51). K
*Saunders, F. A., Ph. D., 504 Ostrom Ave., Syracuse, N. Y. (48). 1906. B
Saunders, James, M. D., Lock Box 147, Orange, Tex. (52). K
*Saunders, William, LL.D., F. R. S. C., F. L. S., Canadian Experimental Farms, Ottawa, Canada. (17). 1874. F
Saunders, Wm. H., 1407 F St. N.W., Washington, D. C. (52). I
*Savage, Thomas E., Univ. of Illinois, Urbana, Ill. (52). 1908. E F G
*Savage, W. L., M. D., Mamaroneck, N. Y. (51). 1902. K
*Saville, Marshall H., Amer. Mus. Nat. History, Central Park, New York, N. Y. (39). 1892. H
Sawtelle, William Otis, 29 Ware St., Cambridge, Mass. (57). A B
Sawyer, Arthur R., E. E., East Lansing, Mich. (58). B D
Sawyer, Frederic Hayward, Teacher in Public Schools, 16 Sparhawk St., Brighton Dist., Boston, Mass. (58). E
Sayer, William Smith, Agricultural College, East Lansing, Mich. (58). C
Sayles, Robert Wilcox, Geological Section, University Museum, Cambridge, Mass. (55). E
*Sayre, Herbert Armistead, Ph. D., Prof. Physics and Astronomy, Univ. of Alabama, University, Ala. (54). 1906. A B
Scaife, William Lucien, 28th St., Pittsburg, Pa. (51). B D
*SCHAEBERLE, J. M., 502 Second St., Ann Arbor, Mich. (34). 1886. A
Schaeffer, Henri N. F., care of Montreal Cotton Co., Valleyfield, Canada. (46). C
Schaffer, Mrs. Mary Townsend Sharpless, 1309 Arch St., Phila., Pa. (38). E F
*Schaffner, John H., Botanical Dept., Ohio State University, Columbus, Ohio. (48). 1899. G
Schaller, Waldemar T., U. S. Geological Survey, Washington, D. C. (53). E

Scharar, Christian H., 2073 N. Main Ave., Scranton, Pa. (33). **A D E H**

Schenck, Charles C., Ph. D., 1007 St. Paul St., Baltimore, Md. (51). **B**

Scherf, C. Harry, care of State Normal School, Fairmont, W. Va. (53). **F**

SCHERMERHORN, F. AUG., 101 University Place, New York, N. Y. (36).

Schernikow, Ernest, 42 Broadway, New York, N. Y. (49).

Schiedt, Richard Conrad, Professor of Biology, Franklin and Marshall College, Lancaster, Pa. (50). **F**

Schieffelin, Eugene, 865 Madison Ave., New York, N. Y. (50).

Schiertz, Ferdinand Alfred, Helena, Mont. (50). **D E**

Schiff, D. C., D. D. S., 404 Schiller Bldg., Chicago, Ill. (58).

*Schlesinger, Frank, The Observatory, Allegheny, Pa. (51). 1902. **A**

Schlichting, Emil, Analytical Chemist, 38 Cranberry St., Brooklyn, N. Y. (50). **C**

*Schlotterbeck, Julius O., 1319 Israel Hall Ave., Ann Arbor, Mich. (46). 1899. **G**

*Schmeckebier, Lawrence Frederick, Ph. D., Dept. of the Interior Washington, D. C. (50). 1902. **E I**

Schmid, Dr. H. Ernest, White Plains, N. Y. (25).

Schmidt, Wm. Carl, M. D., 2417 So. Broadway, St. Louis, Mo. (58). **K**

Schmitt, A. Emil, M. D., Independence Ave., Riverdale-on-Hudson, N. Y. (50). **K**

*Schmucker, Samuel Christian, Ph. D., Professor of Biology, Normal School, West Chester, Pa. (53). 1906. **F G**.

*Schneider, Albert, 723 Pacific Ave., San Francisco, Cal. (54). 1906. **C**

Schneider, Edward Christian, Ph. D., Professor of Biology, Colorado College, Colorado Springs, Colo. (55). **F G**

Schniewind, F., Ph. D., Chemical Engineer, 17 Battery Place, New York, N. Y. (57). **C**

Schniewind, Heinrich, Jr., 62 Greene St., New York, N. Y. (57).

*Schober, Wm. Bush, Lehigh University, South Bethlehem, Pa. (52). 1905. **C**

Schobinger, John J., 1083 Armida Ave., Morgan Park, Ill. (34). **B**

*Schöney, L., M. D., St. James Court, 143d St. and 7th Ave., New York, N. Y. (29). 1900. **F**

Schoonhoven, John J., 1374 Union St., Brooklyn, N. Y. (52). **F**

Schott, Chas. M., Jr., 25 Broad St., New York, N. Y. (57).

*Schottenfels, Ida M., 684 E. 48th Pl., Chicago, Ill. (58). 1908. **A**

Schreiner, Oswald, Bureau of Soils, U. S. Dept. Agric., Washington, D. C. (58). **C**

Schuarty, Frederick W., 452 Madison Ave., Albany, N. Y. (57). C

*Schuchert, Charles, Yale University Museum, New Haven, Conn. (52). 1905. E F

Schuh, Richard Edwin, Ph. D., Professor of Biology, Howard Univ., Washington, D. C. (54).

Schultz, Alfred R., U. S. Geological Survey, Washington, D. C. (57). E

Schultz, Carl H., 430–444 First Ave., bet. 25th and 26th Sts., New York, N. Y. (29).

*Schultz, Louis G., Oficiana Meterologica Argentina, Viamonte 640, Buenos Aires, Argentina. (52). 1907. B

*Schultze, Arthur, 4 West 91st St., New York, N. Y. (54). 1906. A

*Schurman, Jacob Gould, Ph. D., LL.D., President, Cornell University, Ithaca, N. Y. (49). 1901. I

*Schwarz, E. A., U. S. Department of Agriculture, Washington, D. C. (29). 1895. F

Schwartz, Frederick W., Dept. Chemistry, Rensselaer Polytechnic Inst., Albany, N. Y. (57). C

*Schweitzer, Paul, Professor of Chemistry, State Univ. of Missouri, Columbia, Mo. (24). 1877. B C

Scofield, Carl S., U. S. Department of Agriculture, Washington, D. C. (52). G

Scott, Prof. Arthur William, St. David's College, Lampeter, S. Wales, England. (46). A B

*Scott, Charles F., Westinghouse Electric and Mfg. Co., Pittsburg, Pa. (48). 1900. B

Scott, F. J., Jr., 609 West 60th St., Chicago, Ill. (58).

Scott, John W., 36 John St., New York, N. Y. (57).

Scott, John W., Instr. in Biology, Westport High School, 4014 Baltimore St., Kansas City, Mo. (58). F

*Scott, W. M., U. S. Dept. Agriculture, Washington, D. C. (50). F

Scott, Will, Mitchell, Ind. (58). F

Scovel, Edward C., Rosebud, S. Dak. (52).

*Scovell, M. A., Director and Chemist, Agricultural Experiment Station, Lexington, Ky. (35). 1887. C

Scribner, Gilbert H., "Inglehurst," Yonkers, N. Y. (57).

Scripture, Arthur M., Principal of High School, New Hartford, N. Y. (51). A D

*Scudder, Samuel H., Cambridge, Mass. (13). 1874. F

Scull, Harry, 512 Traders Bldg., Chicago, Ill. (58).

*Scull, Miss Sarah A., Smethport, Pa. (40). 1895. H

Seabrook, Harry Hartshorne, M. D., 118 East 72d St., New York, N. Y. (58). K

Seal, Alfred Newlin, Ph. D., Professor of Chemistry and Physics, Girard College, Philadelphia, Pa. (50). B C

*Seaman, Arthur Edmund, Professor of Geology and Mineralogy, Michigan College of Mines, Houghton, Mich. (53). 1906. E

Seaman, Louis Livingston, M. D., 247 Fifth Ave., New York, N. Y. (58). K

*Seaman, W. H., Chemist, 1424 11th St. N.W., Washington, D. C. (23). 1874. C F

Searle, Frederick Edwards, Detroit University School, Detroit, Mich. (52). B

*Searle, Rev. George M., Paulist Fathers, 415 West 59th St., New York, N. Y. (39). 1891. A

Sears, Henry Francis, M. D., Hale Street, Beverly, Mass. (50). K

*Seashore, Carl E., Univ. of Iowa, Iowa City, Iowa. (49). 1902. H

Seawell, Benjamin Lee, Teacher of Biology, State Normal School, Warrensburg, Mo. (50). F

*Sedgwick, Prof. William Thompson, Massachusetts Institute of Technology, Boston, Mass. (47). 1898. F G K

*See, Horace, 1 Broadway, New York, N. Y. (34). 1886. D

See, James W., M. E., Reutschler Bldg., Hamilton, Ohio. (51). D

*See, Prof. T. J. J., Naval Observatory, Mare Island, Cal. (48). 1901. A

*Seelig, M. G., M. D., Humboldt Bldg., 537 N. Grand Ave., St. Louis, Mo. (54). 1906. K

*Segerblom, Wilhelm, Professor of Chemistry, Phillips Exeter Academy, Exeter, N. H. (53). 1906. C

Seitz, Chas E., 100 William St., New York, N. Y. (57).

*Selby, Augustine Dawson, Agric. Exper. Station, Wooster, Ohio. (44). 1900. G

Seligman, Isaac N., 1 William St., New York, N. Y. (49).

*Sellards, Elias Howard, State Geologist, Fla. State Geol. Survey, Tallahassie, Fla. (54). 1906. E F

*Sellers, James Freeman, Prof. of Chemistry, Mercer University, Macon, Ga. (50). 1906. C

Sellew, George Tucker, Ph. D., Prof. of Mathematics, Knox College, Galesburg, Ill. (58). A

Sellew, Timothy G., 462 Park St., Upper Montclair, N. J. (57).

Sergel, Charles H., 4578 Oakenwald Ave., Chicago, Ill. (58).

*Serviss, Garrett P., 8 Middagh St., Brooklyn, N. Y. (52). 1906.

Sessinghaus, Gustavus, M. E., 915 Mo. Trust Bldg., St. Louis, Mo. (50). E

Sever, George F., Electrical Engineer, Broadway and 117th St., New York, N. Y. (49). B

Seymour, George Steele, Special Examiner, Interstate Commerce Comm., Washington, D. C. (51). B C

*Seymour, Paul Henry, 245 East 61st St., Chicago, Ill. (44) 1896. C

Seymour, Thomas Day, Yale Univ., New Haven, Conn. (57).
Shafer, John A., Custodian of the Museums, N. Y. Botanical Garden, Bronx Park, New York, N. Y. (51). G
Shaffner, Samuel C., Supt., Electric Lighting Co., Mobile, Ala. (50). C D
Shambaugh, George E., 5317 Greenwood Ave., Chicago, Ill. (58). K
*Shantz, Homer Le Roy, Ph. D., Dept. of Botany, Univ. of Louisiana, Baton Rouge, La. (50). 1903. F G
Share, William W., Ph. D., Crescent Athletic Club, Brooklyn, N. Y. (57). C E
Sharp, Charles Cutler., C. E., Kimberly, W. Va. (50). D E
*Sharp, Dr. Clayton H., Electrical Testing Laboratory, 80th St. and East End Ave., New York, N. Y. (45). 1897. B
Sharp, Edward Affleck, M.D., Katonah, N. Y. (56). K
Sharpe, Richard W., 1121 Bedford Ave., Brooklyn, N. Y. (51). F
Sharples, Philip Price, A. B., 22 Concord Ave., Cambridge, Mass. (47). C
*Sharples, Stephen P., 26 Broad St., Boston, Mass. (29). 1884. C
Shattuck, Prof. C. H., Botany Bldg., Univ. of Chicago, Chicago, Ill. (58). G
*SHATTUCK, FREDERICK C., M. D., Professor Clinical Medicine, Harvard Medical College, Boston, Mass. (50). 1901. F K
*Shattuck, George Burbank, Vassar College, Poughkeepsie, N. Y. (47). 1899. E K
*Shattuck, Samuel Walker, Professor of Mathematics, University of Illinois, Urbana, Ill. (50). 1902. A
Shaw, Charles Frederick, State College, Penn. (58). E
*Shaw, Dr. Charles Hugh, Ambler, Pa. (52). 1906. G
Shaw, Edwin C., M. E., E. E., 120 S. Union St., Akron, Ohio. (50). D
Shaw, Henry Clay, C. E., Glenshaw, Pa. (51). D
Shaw, Henry Lyman, M. D., 19 Commonwealth Ave., Boston, Mass. (51). K
*Shaw, James Byrine, Decatur, Ill. (58). 1908. A
Shaw, Mrs. John C., 317 Convent Ave., New York, N. Y. (57).
*Shaw, Walter Robert, Ph. D., 167 Calle Nueva, Ermita, Manila, P. I. (47). 1902. F G
Shaw, Wilson A., Cashier, Merchants and Manf. National Bank, Pittsburg, Pa. (50). I
*Shea, Daniel William, Prof. of Physics, Catholic University of America, Washington, D. C. (54). 1906. B
SHEAFER, A. W., Pottsville, Pa. (28).
*Shear, Cornelius L., U. S. Dept. Agriculture, Washington, D. C (49). 1901. G

*Shearer, John Sanford, Instructor in Physics, Cornell University, Ithaca, N. Y. (52). 1906. B

Shears, Dr. George F., 2911 Prairie Ave., Chicago, Ill. (58). K

*Shedd, John C., Westminster Univ., Denver, Colo. (50). 1906. A B

*Shedd, Solon, Professor of Geology and Mining, State Agricultural College, Pullman, Wash. (51). 1906. E

Shedlock, Alfred, Mech. Engineer, 45 Broadway, New York, N. Y. (57). D

Sheffield, George St. John, Twin Elms Farm, Attleborough, Mass. (50).

Sheldon, Edmund P., 531 Lumber Exchange, Portland, Oregon. (54). G

*Sheldon, John Lewis, Ph. D., Prof. Botany and Bacteriology, West Va. University, Morgantown, W. Va. (50). 1903. G

Sheldon, Mrs. J. M. Arms, 18 W. Cedar St., Boston, Mass. (44). F

Sheldon, Ralph Edward, Hull Laboratory of Anatomy, Univ. of Chicago, Chicago, Ill. (56). F

*Sheldon, Samuel, A. M., Ph. D., Polytechnic Institute, Brooklyn, N. Y. (42). 1894. B

Shelford, Victor Ernest, Ph. D., Asso. in Zoology, Univ. of Chicago, Chicago, Ill. (58). F

Shepard, Edward M., 128 Broadway, N. Y. (57).

Shepard, William O., Ph. D., 6410 Stewart Ave., Chicago, Ill. (58)

SHEPHERD, MISS ELIZABETH, 253 W. 128th St., New York, N. Y. (39).

Shepherd, Frank I., Whittier, Cal. (48). C

Shepard, John Frederick, Univ. of Michigan, Ann Arbor, Mich. (54). H K

Shepperd, J. H., Dean and Vice Director, North Dakota Agric. College, Agricultural College, North Dakota. (54).

Sherman, Dr. E., Amelia, National, Iowa. (58).

*Sherman, Henry Clapp, Instructor in Analytical Chemistry, Columbia University, New York, N. Y. (51). 1906. C

Sherman, Lewis, M. D., 448 Jackson St., Milwaukee, Wis. (50). F K

Sherwood, George H., American Museum of Natural History, New York, N. Y. (56).

*Sherzer, William Hittell, Prof. of Geology, State Normal College, Ypsilanti, Mich. (58). 1908. E

Shidy, Leland P., U. S. Coast and Geodetic Survey, Washington, D. C. (52). G

*Shimek, Bohumil, Professor of Botany, State University of Iowa, Iowa City, Iowa. (52). 1903. E G

Shimer, Hervey Woodburn, Instructor in Geology, Massachusetts Institute of Technology, Boston, Mass. (53). E

*Shimer, Porter W., E. M., Ph. D., Easton, Pa. (38). 1889. C

Shingler, George Pinckney, Jr., Prof. of Chemistry, Emory College, Oxford, Ga. (58). C

Shinn, Charles Howard, U. S. Forest Supervisor, Northfork, Cal. (50). F G

Shoemaker, Henry W., 37–43 Wall St., New York, N. Y. (57).

Shore, Albert Ferdinand, 209 Nassau Ave., Brooklyn, N. Y. (54). D

*Short, R. L., Care D. C. Heath & Co., 378–388 Wabash Ave., Chicago, Ill. (55). 1908. I

Shott, John A., Professor of Physics, Westminster College, New Wilmington, Pa. (53). B

Shreve, Forrest, Ph. D., Desert Botanical Lab. of the Carnegie Institution, Tucson, Arizona. (57). G

SHRYOCK, WM. KNIGHT, 21 North 7th St., Philadelphia, Pa. (54).

Shull, Charles Albert, Prof. of Biology, Hamilton College, Lexington, Ky. (58). F

*Shull, George Harrison, Cold Spring Harbor, Long Island, N. Y. (53). 1905. G

Shultz, Charles S., Hoboken, N. J. (31). F

Shurtleff, Eugene, M. D., College of Physicians and Surgeons, 517 Shawmut Ave., Boston, Mass. (52). K

*Shute, D. K., M. D., 1719 De Sales St. N.W., Washington, D. C. (50). 1906. F I K

*Shutt, Frank T., F. E. C., F. C. S., Dominion Experimental Farms, Ottawa, Canada. (47). 1898. C

*Sias, Solomon, M. D., Schoharie, N. Y. (10). 1874. K

Sickels, Ivin, M. D., College City of New York, New York, N. Y. (50). F K

Siebel, John E., Ph. D., 1424 Montana St., Chicago, Ill. (57).

Sieberg, W. H. I., Hotel Winthrop, Cor. 125th St., and 7th Ave., New York, N. Y. (57).

Siedenburg, Frederic S. J., Professor of Physics, St. Louis University, Grand Ave. and Pine St., St. Louis, Mo. (53). B L

Siemon, Rudolf, 22 East Jefferson St., Fort Wayne, Ind. (40). A F

*Sigerfoos, Chas. Peter, Prof. Zoology, University of Minnesota, Minneapolis, Minn. (54). 1906. F

*Sigsbee, Charles D., Rear Admiral, U. S. N., Metropolitan Club, Washington, D. C. (28). 1882. D E

Silber, Frederick D., 5632 Washington Ave., Chicago, Ill. (58).

Silvester, Charles Frederick, Curator Morphological Museum and Assistant in Anatomy, Princeton University, 10 Nassau Hall, Princeton, N. J. (54). F

Silvester, Richard W., President, Maryland Agricultural College, College Park, Md. (50). G

Silvestri, Hugo, Consul of Austria-Hungary, 517 Schofield Bldg., Cleveland, Ohio. (58).

Simkhovitch, V. G., Ph. D., Columbia University, New York, N. Y. (54). I

Simmons, George H., M. D., Secy. Amer. Med. Assoc., 103 Dearborn St., Chicago, Ill. (58). K

Simon, Charles E., M. D., 1302 Madison Ave., Baltimore, Md. (58). K

*Simon, Dr. Wm., Catonsville, Md. (29). 1859. C

*Simonds, Frederic W., Professor of Geology, University of Texas, Austin, Texas. (25). 1888. E F

Simonds, Ossian C., 1431 Montrose Ave., Chicago, Ill. (58).

Simons, Miss Etoile B., Manual Training High School, Indianapolis, Ind. (57). G

Simonson, Wm., 126 W. 9th St., Cincinnati, Ohio. (57). C

Simpson, Jesse Pickrell, M. D., Palmer, Ill. (51). H K

Simpson, John Crayke, M. D., 1421 Mass. Ave., Washington, D. C. (51). K

Simpson, Quintus Irvin, Palmer, Ill. (54). F H

Simpson, William Kelly, M. D., 952 Lexington Ave., New York, N. Y. (57). K

Sinclair, Alexander Grant, M. D., LL. D., 126 North Court Ave., Memphis, Tenn. (52). K

*Sinclair, Cephas Hempstone, U. S. Coast and Geodetic Survey, Washington, D. C. (52). 1908. A

Singer, George Park, Dept. of Natural Sciences, Central State Normal School, Lock Haven, Pa. (50). B

Skiff, F. J. V., Director, Field Museum of Nat. History, Chicago, Ill. (43).

*Skinner, Aaron Nichols, U. S. N., 506 The Alabama, Washington, D. C. (40). 1893. A

*Skinner, Charles Edward, Engineering Dept. Westinghouse Electrical & Manfg. Co., East Pittsburg, Pa. (54). 1906. D

*Skinner, Clarence A., Ph. D., University of Nebraska, Lincoln, Neb. (48). 1903. B

Skinner, Edward H., 211, 212 Rialto Bldg., Kansas City, Mo. (57). K I

*Skinner, Henry, M. D., The Academy of Natural Sciences of Phila., Philadelphia, Pa. (47). 1902. F K

Slade, Denison Rogers, Centre Harbor, R. F. D., N. H. (55). E

Slade, Elisha, Somerset, Mass. (29). F

Slagle, Robert Lincoln, Ph. D., Brookings, S. D. (50). C E

*Slaught, Herbert Ellsworth, Asst. Prof. of Mathematics, University of Chicago, Chicago, Ill. (58). 1908. A

*Slichter, Charles S., Professor of Applied Mathematics, University of Wisconsin, Madison, Wis. (51). 1902. A

*Slingerland, Mark Vernon, Assistant Professor of Economic Entomology, Cornell University, Ithaca, N. Y. (50). 1901. F

*Slipher, V. M., Lowell Observatory, Flagstaff, Arizona. (52). 1908. A

Sloan, Benson, B. 141 East 36th St., New York, N. Y. (57).

Slocom, Arthur W., Field Museum of Nat'l History, Chicago, Ill. (58).

Slocum, Chas. E., Ph. D., M. D., Defiance, Ohio. (34). F G H

*Slocum, Frederick, Ph. D., Asst. Prof. Astronomy, Brown Univ., Providence, R. I. (47). 1906.

Slonaker, J. Rollin, 334 Kingsley Ave., Palo Alto, Cal. (49). F

*Slosson, Edwin E., Associate Editor, The Independent, 130 Fulton St., New York, N. Y. (50). 1901. C

*Small, John Kunkel, N. Y. Botanical Garden, Bedford Park, New York, N. Y. (44). 1902. G

Smallwood, Miss Mabel Elizabeth, 430 W. Adams St., Chicago, Ill. (52). F

*Smallwood, William Martin, Syracuse University, Syracuse, N. Y. (50). 1903. E F

Smeaton, Wm. Gabb, Instr. of General Chemistry, University of Michigan, Ann Arbor, Mich. (57). C

Smillie, Thomas W., U. S. National Museum, Washington, D. C. (40). F

*Smith, Prof. Albert W., Case School of Applied Science, Cleveland, Ohio. (47). 1900. C

*Smith, Alexander, Ph. D., University of Chicago, Chicago, Ill. (40). 1892. C

Smith, Alice Maude, M. D., 1218 N. 4th St., Tacoma, Wash. (53). K

*Smith, Allen J., M. D., University of Pennsylvania, Philadelphia, Pa. (47). 1905. H

*Smith, Andrew H., M. D., 584 So. Main St., Geneva, N. Y. (54). 1906. K

Smith, Mrs. Annie Morrill, 78 Orange St., Brooklyn, N. Y. (49). G

Smith, Arthur George, Prof. Physics and Mechanics, State Univ. of Iowa, Iowa City, Iowa. (50). A

*Smith, Arthur Whitmore, Ph. D., University of Michigan, Ann Arbor, Mich. (44). 1906. B

Smith, Burnett, Skaneateles, N. Y. (54). E

*Smith, Prof. Charles J., 2035 Adelbert Road, S. E. Cleveland, Ohio. (32). 1885. A B

*Smith, Prof. Edgar F., University of Pennsylvania, Philadelphia Pa. (33). 1891. C

Smith, Edward Sanborn, M. D., 301 N. Rawlins St., Macon, Mo. (58). **K**

*Smith, Erastus G., Ph. D., Director, Beloit Sanitary Laboratory, Beloit, Wis. (34). 1887. **C**

*Smith, Ernest Ellsworth, 26 East 29th St., New York, N. Y. (43). 1898. **F K**

Smith, Ernest Reveley, B. S., Teacher of Physics, Syracuse High School, 106 Dell St., Syracuse, N. Y. (56). **B**

*Smith, Erwin F., U. S. Dept. Agriculture, Washington, D. C. (34). 1890. **G**

Smith, Eugene, C. E., 317 Washington St., Hoboken, N. J. (50). **D**

*Smith, Prof. Eugene Allen, State Geologist, University, Ala. (20). 1877. **C E**

Smith, Dr. Frances G., Dept. of Botany, Smith College, Northampton, Mass. (57). **G**

*Smith, Francis Henry, University Station, Charlottesville, Va. (54). 1906.

*Smith, Frank, University of Illinois, Urbana, Ill. (49). 1900. **F**

Smith, Franklin Orion, Woodbine, Iowa. (58).

Smith, Franklin W., Mining Engineer, Bisbee, Ariz. (57). **D E**

Smith, Fred. W., Dept. Science, Northern Normal and Industrial School, Aberdeen, S. D. (54). **F**

*Smith, George Otis, U. S. Geological Survey, Washington, D. C. (52). 1906. **E**

Smith, Grant, 6335 Greenwood Ave., Chicago, Ill. (58).

Smith, H. Carlton, Harvard Medical School, Boston, Mass. (56). **K**

*Smith, Harlan I., Amer. Mus. Nat. History, Central Park, New York, N. Y. (41). 1896. **H**

*Smith, Harold B., Professor of Electrical Engineering, Polytechnic Institute, Worcester, Mass. (43). 1898. **D**

Smith, Herbert Stearns Squier, Professor of Civil Engineering, Princeton University, Princeton, N. J. (29). **D**

Smith, Howard Dexter, Ph. D., Instr. in Chemistry, Beloit College, Beloit, Wis. (58). **C**

*Smith, Hugh M., Bureau of Fisheries, U. S. Dept. Commerce and Labor, Washington, D. C. (52). 1906. **F**

Smith, Huron H., Dendrologist, Field Museum, Chicago, Ill. (56). **G**

Smith, J. C., 131 Carondelet St., New Orleans, La. (48).

Smith, James Hervey, 5432 Ohio St., Austin Sta., Chicago, Ill. (40).

*Smith, Jared G., Hawaiian Experiment Station, Honolulu, H. T. (47). 1901. **G**

SMITH, MISS JENNIE M., 260 Watson Blvd., Allegheny City, Pa. (50). A E F

Smith, Jesse L., Supt. of Schools, Highland Park, Ill. (58).

*Smith, John B., Ph. D., Rutgers College, New Brunswick, N. J. (32). 1884. F

Smith, Joseph R., M. D., LL. D., Brig. Gen'l and Assistant Surgeon General, U. S. A., 2135 Spruce St., Philadelphia, Pa. (43).

Smith, Lee H., M. D., President Buffalo Society of Natural Science, 663 Main St., Buffalo, N. Y. (51). H

Smith, Leonard S., Prof. in charge of surveying, University of Wisconsin, Madison, Wis. (57). A

Smith, Leslie Brewster, 6024 Hurst St., New Orleans, La. (55). A B

SMITH, MISS MATILDA H., 40 Library Place, Alleghany City, Pa. (50). A E F

Smith, Oakley G., 603 First Ave., Cedar Rapids, Iowa. (58). K

Smith, Dr. Philip Sidney, U. S. Geol. Survey, Washington, D. C. (47). E

*SMITH, Q. CINCINNATUS, M. D., 1055 Fifth St., San Diego, Cal. (26). 1881. K

Smith, R. I., State Entomologist, Atlanta, Ga. (54). F

Smith, Thomas A., Professor of Mathematics and Physics, Beloit College, Beloit, Wis. (50). A B

Smith, T. Guilford, C. E., Regent, University of the State of New York, Buffalo, N. Y. (50). D

Smith, W. Hinckle, 511 Chestnut St., Philadelphia, Pa. (54).

Smith, Warren D., Actg. Chief Div. Mines, Bureau of Science, Manila, P. I. (57). E

*Smith, Warren Rufus, Instructor in Chemistry, Lewis Institute, Chicago, Ill. (52). 1906. C

SMITH, WM. ALEX., 412 Madison Ave., New York, N. Y. (57).

*Smith, William Benjamin, Professor of Mathematics, Tulane University, New Orleans, La. (50). 1901. A

*Smith, W. S. Tangier, Ph. D., Univ. of Nevada, Reno, Nev. (50). 1906. E

Smith, William T., M. D., Prof. of Physiology and Dean of Dartmouth Medical School, Hanover, N. H. (51). K

*Smock, Prof. John Conover, Trenton, N. J. (23). 1879. E

Smock, Ledru Pierson, A. M., M. D., 3330 Chestnut St., Philadelphia, Pa. (54).

*Smyth, C. H., Jr., Princeton University, Princeton, N. J. (38). 1894. E

Smyth, Ellison A., Jr., LL. D., Prof. of Biology, Virginia Polytechnic Inst., Blacksburg, Va. (57). F

*Sneath, E. Hershey, Professor of Philosophy, Yale University, New Haven, Conn. (51). 1902. H

Snedaker, James Angus, Mining Engineer, 850 Equitable Bldg Denver, Colo. (50). D

Snelling, Walter Otheman, U. S. Geological Survey, Washington, D. C. (58). C

Sneve, Haldor, M. D., Lowry Arcade, St. Paul, Minn. (51). K

*Snow, Prof. Benjamin W., 518 Wisconsin Ave., Madison, Wis. (35). 1889. B

Snow, Charles Carleton, 1411 20th St. N.W., Washington, D. C. (52).

Snow, Elbridge G., 56 Cedar St., New York, N. Y. (57).

*Snow, F. H., Ph. D., LL. D., Professor of Natural History, University of Kansas, Lawrence, Kan. (29). 1881. E F

Snow, Laetitia Morris, State Normal School, Box 200, Farmville, Va. (57).

Snyder, Fred. D., M. D., 10 Center St., Ashtabula, Ohio. (51). E F H

*Snyder, Prof. Harry, Agricultural College, University of Minnesota, Saint Anthony Park, Minn. (44). 1897. C

*Snyder, Prof. Monroe B., Philadelphia Astronomical Observatory, Philadelphia, Pa. (24). 1882. A B

*Snyder, Zachariah Xenophon, President, State Normal School, Greeley, Colo. (50). 1907. F

*Solley, Fred P., M. D., 114 East 60th St., New York, N. Y. (57). 1908. K

*Sollmann, Torald, M. D., Professor of Pharmacology and Materia Medica, Medical College, Western Reserve University, Cleveland, Ohio (52). 1906. K

Sondern, Frederic E., M. D., 200 West 56th St., New York, N. Y. (57). K

*Soper, George A., Ph. D., 29 Broadway, New York, N. Y. (46). 1907. C

Sooysmith, Chas., 71 Broadway, New York, N. Y. (57). D

*Soule, Prof. William, Ph. D., Mount Union Coll., Alliance, Ohio. (33). 1899. B C E

Southall, James P. C., Professor of Physics, Alabama Polytechnic Institute, Auburn, Ala. (51). B

*Spalding, Frederick P., Professor of Civil Engineering, Univ. of Missouri, Columbia, Mo. (46). 1899. D

*Spalding, Volney M., Ph. D., 420 E. 4th St. Tucson, Arizona. (51). 1902. G

Spangler, Harry Allen, M. D., Carlisle, Pa. (51). K

*Spaulding, Edward G., Ph. D., College of the City of New York New York, N. Y. (50). 1905. I

Spaulding, Perley, Bureau Plant Industry, Dept. Agriculture, Washington, D. C. (52). G

Spayd, Henry Howard, Superintendent of Schools, Minersville, Pa (52). B E K

Spear, Gen. Ellis, 1601 Laurel Ave., Mt. Pleasant, Washington, D. C. (52). D

*Spencer, Arthur Coe, U. S. Geological Survey, Washington, D. C. (52). 1905. E

*Spencer, Prof. J. W., 2019 Hillyer Place, Washington, D. C. (28). 1882. E

Spencer, Mrs. Lorillard, 107 East 17th St., New York, N. Y. (57).

*SPENZER, JOHN G., M. D., 716 Rose Bldg., Cleveland, Ohio. (37). 1895. C

Sperry, Elmer A., Electrical Engineer, 100 Marlborough Road, Prospect Park, So. Brooklyn, N. Y. (51). D

*Speyers, Clarence Livingston, Associate Professor of Chem stry, Rutgers College, New Brunswick, N. J. (50). 1901. C

Spicer, C. E., Joliet, Ill. (58).

Spiegelhalter, Dr. Joseph, 2166 Lafayette Ave., St. Louis, Mo. (47). E

*Spillman, Wm. Jasper, U. S. Dept. of Agr., Washington, D. C. (52). 1905. G

*Spinney, Prof. L. B., Iowa State College, Ames, Iowa. (42). 1897. B

*Spitzka, Edward Anthony, M. D., Prof. of General Anatomy, Jefferson Medical College, Philadelphia, Pa. (54). 1906. H K

Spofford, Paul N., P. O. Box 1667, New York, N. Y. (36).

Spohn, Arthur Edward, M. D., Corpus Christi, Tex. (50). F K

Spooner, Chas. Stockman, Agricultural Exp. Station, Durham, N. H. (57). F

Sprague, A. A., 2710 Prairie Ave., Chicago, Ill. (58).

SPRAGUE, C. H., Malden, Mass. (29).

Sprague, Leonard P., M. D., Mary Fletcher Hospital, Burlington, Vt. (57). G

*Springer, Dr. Alfred, 312 E. 2d St., Cincinnati, Ohio. (24). 1880. C

SPRINGER, HON. FRANK, East Las Vegas, N. M. (57).

*Springsteen, Harry W., Asst. Prof. Physics, Western Reserve Univ., Cleveland, Ohio. (49). 1906. A B

Squibb, Charles F., Bernardsville, N. J. (43).

Squibb, Edward Hamilton, M. D., 148 Columbia Heights, Brooklyn, N. Y. (41). F K

*Squier, Major George Owen, U. S. A., U. S. War Dept., Washington, D. C. (54). 1906. B

Stackpole, Miss Caroline E., Teachers College, Columbia Univ., New York, N. Y. (53) B C F G

*Stahley, George D., A. M., M. D., Gettysburg, Pa. (47). 1907 F G

Stair, Leslie Dalrymple, Room 722, Telephone Bldg., Indianapolis Ind. (52). G

*Stanley-Brown, Joseph, Cold Spring Harbor, L. I., N. Y. (52). 1906.
Stanley, William, Great Barrington, Mass. (50).
STANTON, FRANK MCMILLAN, E. M., Agent of Atlantic, Baltic and Central Mining Cos., Atlantic Mine, Mich. (51). **D E**
Stanton, John R., 15 William St., New York, N. Y. (49).
Stanton, Robert Brewster, Civil and Mining Engineer, 66 Broadway, New York, N. Y. (51). **D**
*Stanton, Timothy W., U. S. Nat'l Museum, Washington, D. C. (50). 1902. **E**
*Starr, Frederick, Ph. D., University of Chicago, Chicago, Ill. (36). 1892. **E H**
*Starr, M. Allen, M. D., 5 West 54th St., New York, N. Y. (50). 1901. **K**
Starr, Western, 51–107 Dearborn St., Chicago, Ill. (58).
Starrett, M. G., 349 W. 85th St., New York, N. Y. (49).
Stauffer, Clinton R., 5514 Madison Ave., Chicago, Ill. (57). **E**
Stearns, Edward F., 4451 Oakenwald Ave., Chicago, Ill. (58).
Stearns, Guy Beckley, M. D., 119 W. 82d St., New York, N. Y. (54). **I K**
*Stearns, Robert E. C., Ph. D., 1025 East Eighteenth St., Los Angeles, Cal. (18). 1874. **F**
Stearns, Thomas B., Mining Engineer, 1720 California St., Denver, Colo. (50). **D E**
Stebbins, Miss Fannie A., 480 Union St., Springfield, Mass (44). **F G**
Stebbins, Joel, Asst. Prof. of Astronomy, University of Illinois, Urbana, Ill. (58).
Steele, Warren Merrill, Prof. of Philosophy, Furman University, Greenville, S. C. (57). **K**
Steer, Justin, M. D., Medical Department, Washington University, St. Louis, Mo. (50). **F K**
STEERS, JAMES R., 101 Park Ave., New York, N. Y. (57).
Steffens, Mathew Joseph, 55–57 East 22d St., Chicago, Ill. (58)
*Steiger, George, Chemical Laboratory, U. S. Geol. Survey, Washington, D. C. (40). 1901. **B C E**
Stein, John B., M. D., 205 East 23d St., New York, N. Y. (57). **K**
Stein, Dr. Simon G., Muscatine, Iowa. (43).
Steinbach, Lewis W., M. D., 1309 N. Broad St., Philadelphia, Pa. (51). **K**
*Steinmetz, Charles Proteus, General Electric Co., Schenectady, N. Y. (40). 1895. **B**
Steinway, Fred T., 15 East 53d St., New York, N. Y. (56).
*Stejneger, Leonhard, Curator of Dept. of Reptiles, U. S. National Museum, Washington, D. C. (40). 1892. **F**
Stellwagen, Thos. C., M. D., Prof. Physiology, Philadelphia Dental College, 1328 Chestnut St., Philadelphia, Pa. (51). **K**

Stephens, Henry Matthew, Professor of Biology, Dickinson College, Carlisle, Pa. (50). F G

Stephens, Roswell P., University of Georgia, Athens, Ga. (57). A

Stephens, Thomas C., Morningside College, Sioux City, Iowa. (57). F

*STEPHENS, W. HUDSON, Lowville, N. Y. (18). 1874. E H

Stephenson, Edward B., Sparta, Ill. (58). B

Stephenson, Lloyd William, Maryland Geol. Survey, Baltimore, Md. (56). E

Stern, Philip Kossuth, Consulting Mechanical and Electrical Engineer, 521 W. 182d St., New York, N. Y. (50). B D

Sternberg, Charles Hazelius, 617 Vemont St., Lawrence, Kansas. (50). E F

*Sternberg, Gen. George M., M. D., LL. D., U. S. A., 2144 California Ave. N. W., Washington, D. C. (24). 1880. F

Sternberger, Edwin, M. D., 43 East 60th St., New York, N. Y. (57). K

Stetson, Francis Lynde, 15 Broad St., New York, N. Y. (57).

Stetson, George R., 1441 Mass. Ave. N. W., Washington, D. C. (49). H I

Stevens, Cyrus Lee, M. D., Secy. of the Medical Society of the State of Pa., Athens, Pa. (51). K

*Stevens, Frank L., Ph. D., Prof. of Biology, College of Agric. and Mech. Arts, West Raleigh, N. C. (44). 1899. G

Stevens, Frederick W., Department of Physics, Lake Forest University, Lake Forest, Ill. (50). B

Stevens, George T., M. D., 22 East 46th St., New York, N. Y. (28). B F K

Stevens, James Franklin, M. D., 405 N. 25th St., Lincoln, Neb. (50). F H K

*Stevens, James S., The University of Maine, Orono, Me. (48). 1900. B

Stevens, Nettie Maria, Instructor in Experimental Morphology, Bryn Mawr College, Bryn Mawr, Pa. (54). F G K

Stevens, Miss Romiett, Teachers College, New York, N. Y. (54). H

*Stevens, Prof. W. LeConte, Washington and Lee University, Lexington, Va. (29). 1882. B

Stevenson, Francis L., International Harvester Co., Harvester Bldg., Chicago, Ill. (47). D

*Stevenson, Prof. John J., University Heights, New York, N. Y. (36). 1888. E

*Stevenson, Mrs. Matilda Coxe, Zuni, N. M. (41). 1893. H

Stevenson, Robert, Jr., Winnetka, Ill. (58).

Stevenson, Wm. H., Professor of Soils, Iowa State College, Ames, Iowa. (55). C

Stewart, Alonzo Hamilton, M. D., Asst. Bacteriologist, Bureau of Health, City Hall, Philadelphia, Pa. (54). K

*Stewart, Colin Campbell, Prof. of Physiology, Dartmouth Medical College, Hanover, N. H. (54). 1906. K

Stewart, Douglas, Assistant to Director, Carnegie Museum, Pittsburg, Pa. (50). E

Stewart, Francis Laird, Murrysville, Pa. (51). G

*Stewart, Fred. Carlton, Botanist, N. Y. Agric. Exper. Station, Geneva, N. Y. (44). 1901. G

*Stewart, George Walter, Professor of Physics, University of North Dakota, Grand Forks, N. Dak. (52). 1906. B

Stewart, Louis B., Prof. Surveying and Geodesy, Univ. of Toronto, Toronto, Canada. (57). A

*Stewart, Oscar M., Asst. Professor of Physics, University of Missouri, Columbia, Mo. (46). 1900. B

Stewart, Robert W., M. D., The Oritz, Cincinnati, Ohio. (51). K

Stewart, Wm. R., 31 Nassau St., New York, N. Y. (57).

*Stickney, Gardner P., 200 Knapp St., Milwaukee, Wis. (44). 1901. H

Stickney, Malcolm Enos, 15 East Gorham St., Madison, Wis. (53). G

*Stieglitz, Dr. Julius, University of Chicago, Chicago, Ill. (39). 1895. C

Stigall, Bennett Merriman, Director, Dept. of Biology, Manual Training High School, Kansas City, Mo. (53). G

*Stiles, Charles Wardell, Ph. D., Hygienic Laboratory, U. S. Public Health and Marine Hospital Service, Washington, D. C. (40). 1892. F

Stiles, Harold M., Northwestern University, Evanston, Ill. (58). B

Still, George A., M. D., care of A. S. O. Hospital, Kirksville, Mo. (50). C K

Stillhamer, Arthur G., 705 N. East St., Bloomington, Ill. (50). B

Stillman, Ernest Goodrich, 9 East 72d St., New York, N. Y. (57). E

Stillman, Prof. John M., Stanford University, California. (41).

Stillman, Wm. O., M. D., 287 State St., Albany, N. Y. (28). K

Stillwell, Albert G., 36 Gold St., New York, N. Y. (57). C

*Stillwell, Lewis Buckley, 100 Broadway, New York, N. Y. (50). 1906. B D

*Stine, W. M., Ph. D., Prof. of Engineering, Swarthmore College, Swarthmore, Pa. (37). 1900. A C

Stockard, Chas. R., Columbia University, New York, N. Y. (52). F

Stockberger, Warner W., Ph. D., U. S. Dept. of Agriculture, Washington, D. C. (58). G

*Stockton, Charles G., M. D., 436 Franklin St., Buffalo, N. Y (51). 1906. K

*Stockwell, John N., 2348 E. 40th St., Cleveland, Ohio. (18). 1875. A

Stoddard, George Howland, M. E., 197 Beacon St., Boston, Mass (51). D

STOECKEL, CARL, Norfolk, Conn. (52). A E

*Stokes, Anson Phelps, 100 William St., New York, N. Y. (50) 1905. I

*Stokes, Henry Newlin, Ph. D., Bureau of Standards, Washington, D. C. (38). 1891. C E

Stolz, Rabbi Joseph, D. D., 4827 Langley Ave., Chicago, Ill. (58).

*Stone, Alfred Holt, The Ontario, Washington, D. C. (51). 1905. H I

*Stone, George E., Professor of Vegetable Pathology and Physiology, Massachusetts Agricultural College, Amherst, Mass. (48). 1902. G

*Stone, Miss Isabelle, Ph. D., 3352 Indiana Ave., Chicago, Ill. (50). 1906. B

Stone, J. F., 100 William St., New York, N. Y. (57).

*Stone, John S., 192 Bay State Road, Boston, Mass. (54). 1906. B

Stone, Julius F., Columbus, Ohio. (48).

Stone, Lincoln R., M. D., Newton, Mass. (31). K

*Stone, Ormond, Director Leander McCormick Observatory, University of Virginia, Charlottesville, Va. (24). 1876. A

Stone, Ralph Walter, U. S. Geological Survey, Washington, D. C. (57). E

Stone, Roland Elisha, Alabama Polytechnic School, Auburn, Ala. (58). G

*Stookey, Lyman Brumbaugh, Ph. D., Medical Dept., University, of Southern California, Los Angeles, Cal. (53). 1906. K

*Storey, Thomas Andrew, Ph. D., M. D., Asst. Prof. of Physical Instruction, College of City of New York, New York, N. Y. (52). 1906. K

Storms, Albert Boynton, President, Iowa State College, Ames, Iowa. (54). I

Storrs, Lucius S., Expert and Engineer of Tests, N. Y., N. H. & H. Railroad Co., New Haven, Conn. (51). E

*Story, Prof. Wm. E., Clark University, Worcester, Mass. (29). 1881. A

Stose, George W., U. S. Geological Survey, Washington, D. C. (52). E

*Stowell, Prof. T. B., Prin., State Normal and Training School, Potsdam, N. Y. (28). 1885. F

*Stradling, George F., Northeast Manual Training School, Philadelphia, Pa. (41). 1900. B

Stramler, A. P., Assayer to the Chitas Mining Co., Stephenville, Texas. (56). C

Strange, William R., 1643 Octavia St., New Orleans, La. (55). **K**
Strauss, Frederick M., 31 West 69th St., New York, N. Y. (57).
Strauss, Joseph, Lt.-Commander, U. S. N., Indian Head, Maryland. (54). **D**
Street, Prof. Jacob R., Syracuse University, Syracuse, N. Y. (58). **L**
Streeter, Miss Stella G., 210 Sip Ave., Jersey City, N. J. (54). **G**
*Stringham, Irving, Professor of Mathematics, University of California, Berkeley, Cal. (51). 1906. **A I**
Stromsten, Frank A., D. Sc., Instructor in Animal Biology, State University of Iowa, Iowa City, Iowa. (52). **F**
Strong, Edwin A., Department of Physics and Chemistry, State Normal School, Ypsilanti, Mich. (46). **B C**
Strong, Frederick F., M. D., 532 Columbus Ave., Boston, Mass. (47). **B C K**
Strong, Frederick G., Box 959, Hartford, Conn. (50). **D**
*Strong, Oliver S., College of Physicians and Surgeons, 437 West 59th St., New York, N. Y. (52). 1903. **K**
*Strong, Reuben Myron, Ph. D., Department of Zoology, University of Chicago, Chicago, Ill. (51). 1906. **F**
Strong, Richard P., Bureau of Science, Manila, P. I. (55). **F**
*Strong, Wendell M., care of Mutual Life, 32 Nassau St., New York, N. Y. (44). 1899. **A B**
Strong, William Walker, Box 586, Johns Hopkins University, Baltimore, Md. (54). **B**
Stuart, William, Professor of Horticulture, University of Vermont, Burlington, Vt. (52). **G**
Stubbs, Joseph Edward, President, Nevada State University, Reno, Nev. (54).
*Stubbs, W. C., Ph. D., 1033 Carondelet St., New Orleans, La. (40). 1901. **F**
*Sturgis, Wm. C., 28 E. Columbia St., Colorado Springs, Colo. (40). 1892. **G**
Sturtevant, Edward, St. George's School, Newport, R. I. (57).
Sugg, J. F. H., 307–8 Howes Blk., Clinton, Iowa. (58).
Sullivan, John Magruder, Ph. D., Professor of Chemistry, Millsaps College, Jackson, Miss. (56). **C**
Sullivan, Lucien Norris, B. S., M. S., 2207 First St. N. W., Washington, D. C. (54). **D**
*Sullivan, Michael Xavier, Bureau of Soils, Washington, D. C. (55). 1907. **K**
Summa, Hugo, M. D., Professor of Medicine, St. Louis University, 2249 St. Louis Ave., St. Louis, Mo. (53). **K**
*Summers, Henry E., Professor of Zoology, Iowa State College of Agric. and Mech. Arts, Ames, Iowa. (50). 1906. **F**

Summers, Joseph, 107 S. 6th St., Columbia, Mo. (51). B
*Sumner, Francis B., Ph. D., Biological Laboratory, U. S. Bureau of Fisheries, Woods Hole, Mass. (51). 1906. F
Sumstine, Prof. David R., Prin., Turtle Creek School, 508 Elliot St., Wilkinsburg, Allegh. Co., Pa. (58). G
Sunderland, Chas. H., 94 W. Passaic Ave., Rutherford, N. J. (57).
Surface, Frank Macy, Maine Agric. Exper. Sta., Orono, Maine. (53). F
*Surface, Harvey Adam, Harrisburg, Pa. (50). 1906. F
*Sutton, William John, Geologist, Esquimalt and Nanaimo Ry. Co., 749 Discovery St., Victoria, B. C. (50). 1906. E
Sutton, W. S., Prof. of Education, University of Texas, Austin, Texas. (58). L
Suzzallo, Henry, Prof. of Education, Teachers College, Columbia Univ., New York, N. Y. (58). H L
*Swain, Prof. Geo. Fillmore, Massachusetts Institute of Technology Boston, Mass. (52). 1906. D
Swain, Joseph, Presdt., Swarthmore College, Swarthmore, Pa. (54).
Swaine, J. M., Macdonald College, Quebec, Canada. (58).
*Swartzell, Karl D., 308 West 8th Ave., Columbus, Ohio. (48). 1906. A
Swenson, Carl G., M. D., 754 Fullerton Ave., Chicago, Ill. (58). K
*Swensson, Emil, C. E., 5511 Hays St., Pittsburg, Pa. (51). 1906. D
Swift, Prof. Fletcher Harper, Univ. of Minnesota, Minneapolis, Minn. (58). L
*Swingle, Walter T., U. S. Dept. Agriculture, Washington, D. C. (40). 1892. G
*Symons, Thomas Baddeley, State Entomologist, College Park, Md. (54). 1906. F
Sylvester, A. H., U. S. Geological Survey, Washington, D. C. (57). E
Taber, G. Major, 3103 Hobart Blvd., Los Angeles, Cal. (51). E
Taber, Mary, 9 East 10th St., New York, N. Y. (57).
*Taff, Joseph Alexander, U. S. Geological Survey, Washington, D. C. (54). 1906. E
TAFT, ELIHU B., Burlington, Vt. (36). H
Taft, Lorado, 1038 Fine Arts Bldg., Chicago, Ill. (58).
*Tainter, Charles Sumner, 1335 Kalmia St., San Diego, Cal. (29). 1881. A B D
Tainter, Frank Stone, Civil Engineer, Far Hills, N. J. (51). D
Takahashi, Katashi, D. Sc., Univ. of Chicago, Chicago, Ill. (58). F
*Takamine, Jokichi, 521 West 179th St., New York, N. Y. (57). 1908. C

*Talbot, Arthur N., Professor of Municipal and Sanitary Engineering, University of Illinois, Urbana, Ill. (51). 1906. D

Talbot, D. H., Sioux City, Iowa. (58).

Talbot, Eugene Solomon, 103 State St., Chicago, Ill. (54).

*Talbot, Henry P., Mass. Institute of Technology, Boston, Mass. (44). 1896. C

Talbot, Miss Marion, S. B., A. M., Ph. D., LL. D., The University of Chicago, Chicago, Ill. (54). C K

*Talbot, Miss Mignon, Prof. of Geology, Mount Holyoke College, South Hadley, Mass. (51). 1906. E

Talbott, Mrs. Laura Osborne, The Lenox, 1523 L St. N.W., Washington, D. C. (36). F G I

*TALMAGE, JAMES EDWARD, Ph. D., Professor of Geology, University of Utah, Salt Lake City, Utah. (50). 1906. E

Taltavall, Wm. Allen, M. D., Redlands, Cal. (57). K

*TANNER, PROF. JOHN HENRY, 7 Central St., Ithaca, N.Y. (47). 1899. A B

*TARR, RALPH STOCKMAN, B. S., Cornell University, Ithaca, N. Y. (49). 1901. I

Tasker, Arthur N., A. B., care of Surgeon-General, U. S. Army, Washington, D. C. (57). C F

*Tatlock, John, A. M., F. R. A. S., 376 West End Ave., New York, N. Y. (50). 1902. A.

Tatnall, Robert R., Asst. Prof. of Physics, Northwestern Univ. Evanston, Ill. (58). B

Taussig, James, Rialto Bldg., St. Louis, Mo. (50). I

Taverner, William, Ashland, Oregon. (56). C

Taylor, Albert Hoyt, Asst. Prof. of Physics, University of Wisconsin, Madison, Wis. (57). B

Taylor, Alexandrina, Hotel New Weston, 31 East 49th St., New York, N. Y. (57).

Taylor, Charles E., Hartley Hall, Columbia Univ., New York, N. Y. (54). C

*Taylor, Edson Homer, Teacher of Mathematics, Eastern Illinois, State Normal School, Charleston, Ill. (53). 1906. A

Taylor, Edward B., Pittsburg, Pa. (50). D

*Taylor, Edward Randolph, Penn Yan, N. Y. (39). 1903. C

*Taylor, Edward Wyllys, M. D., Harvard Medical School, Boston, Mass. (50). 1902. K

Taylor, Estes Park, Grand Junction, Colo. (57). F

*Taylor, Frank Bursley, 548 Home Ave., Fort Wayne, Ind. (39). 1897. A E

Taylor, Henry W., Chief Engineer, House of Representatives, 100 Fifth St. N. E., Washington, D. C. (52). D

Taylor, J. Erskine, M. D., Rockland, Pa. (51). K

Taylor, James, State Inspector of Mines, Peoria, Ill. (56). D

Taylor, James Landon, M. D., Vinita, Oklahoma. (51). **I K**

*Taylor, James M., Prof., Colgate University, Hamilton, N. Y. (33). 1901. **A D**

Taylor, Robert S., 2905 Fairfield Ave., Fort Wayne, Ind. (39).

Taylor, Wm. Alton, U. S. Department of Agriculture, Washington, D. C. (52). **G**

Tays, Eugene Aug. Hoffman, C. E., E. M., San Blas, Fuerte, Sinaloa, Mexico. (50). **D E**

Teeters, Wilber John, State University of Iowa, Iowa City, Iowa. (50) **C F K**

Teeple, John Edgar, Ph. D., Hudson Terminal, New York, N. Y. (57). **C**

Templin, Olin, Lawrence, Kansas. (58).

*Terry, B. T., M. D., Rockefeller Institute, Ave. A and 66th St., New York, N. Y. (54). 1907. **K**

*Terry, Robert James, 1806 Locust St., St. Louis, Mo. (53). 1906. **K**

*Tesla, Nikola, LL.D., 55 W. 27th St., New York, N. Y. (43). 1895. **B**

*Thacher, John Seymour, M. D., 839 Madison Ave., New York, N. Y. (57). 1908. **K**

Thaw, Benjamin, 1046 Fifth Ave., New York, N. Y. (50). **A D**

Thaw, Mrs. William, Box 1086, Pittsburg, Pa. (41). **H**

*Thaxter, Roland, Ph. D., Professor of Cryptogamic Botany, Harvard University, Cambridge, Mass. (50). 1901. **G**

*Thayer, William S., M. D., 406 Cathedral St., Baltimore, Md. (52). 1903. **K**

Thelberg, Elizabeth B., M. D., Resident Physician and Professor of Physiology and Hygiene, Vassar College, Poughkeepsie, N. Y. (50). **F K**

Thiessen, Alfred Henry, Mount Weather, Bluemont, Va. (51). **B**

*Thom, Charles, Agric. Exper. Station, Storrs, Conn. (50). 1901. **G**

*Thomas, Benjamin F., Professor of Physics, Ohio State University, Columbus, Ohio. (29). 1882. **A B**

Thomas, Lancaster, 1932 Mt. Vernon St., Philadelphia, Pa. (52). **B F**

*Thomas, Mason B., Prof. of Biology, Wabash College, Crawfordsville, Ind. (41). 1894. **G**

Thomas, Paul K. M., 50 Morningside Ave., E., New York, N. Y. (57).

*Thompson, Alton Howard, D. D. S., 720 Kansas Ave., Topeka, Kan. (33). 1902. **H**

Thompson, Miss Anna F., P. O. Box 32, Summit, N. J. (49).

Thompson, Henry C., 1717 Carroll Ave., Chicago, Ill. (58).

THOMPSON, HENRY DALLES, 11 Morven St., Princeton, N. J. (57). **A**

Thompson, Hugh L., Consulting Mechanical Engineer, Waterbury, Conn. (51). **D**

Thompson, James David, Library of Congress, Washington, D. C. (52). **A B**

Thompson, James E., Milwaukee, Wis. (48).

Thompson, J. L., M. D., 232 N. Illinois St., Indianapolis, Ind. (39). **F K**

*Thompson, Joseph Osgood, Amherst College, Amherst, Mass. (41). 1893.

Thompson, Ralph Leroy, A. M., M. D., Director, Dept. of Pathology and Bacteriology, St. Louis University, 1400 S. Grand Ave., St. Louis, Mo. (57). **K**

Thompson, Robert M., Wall St. Exchange Bldg., 43 Exchange Place, New York, N. Y. (49).

Thompson, Rev. Walter, D. D., Garrison-on-Hudson, N. Y. (49).

Thompson, Walter N., M. D., Sullivan, Indiana. (58). **K**

*Thompson, W. Gilman, M. D., 34 E. 31st St., New York, N. Y. (50). 1902. **F K**

*Thomson, Elihu, Swampscott, Mass. (37). 1888. **B**

Thomson, Robert Boyd, Biological Dept., University of Toronto, Toronto, Canada. (57). **F G**

*Thornber, John J., Univ. of Arizona, Tucson, Arizona. (50). 1905. **G**

*Thornburg, Charles L., Prof. of Mathematics and Astronomy, Lehigh University, S. Bethlehem, Pa. (44). 1897. **A**

*Thorndike, E. L., Ph. D., Adjunct Prof. of Genetic Psychology, Columbia Univ., New York, N. Y. (49). 1901. **H I K**

THORNE, MRS. PHOEBE ANNA, 558 Madison Ave., New York, N. Y. (50).

*Thornton, William M., Professor of Applied Mathematics, University of Virginia, Charlottesville, Va. (53). 1908. **A**

Thorp, Frank H., 200 Mt. Vernon St., West Roxbury, Mass. (57).

*Thruston, Gates Phillips, Nashville, Tenn. (38). 1890. **H**

*Thruston, R. C. Ballard, Ballard & Ballard Co., Louisville, Ky. (36). 1896. **E**

Thurber, Charles Herbert, 29 Beacon St., Boston, Mass. (52). **I**

Thurber, Sam'l Wood, M. D., 104 East 39th St., New York, N. Y. (57). **K**

*Thwing, Charles Burton, Western Reserve Univ., Cleveland, Ohio. (54). 1906. **B**

Tibbals, Charles Austin, Jr., Instructor in Chemistry, Univ. of Wisconsin, Madison, Wis. (54). **C**

Tibbals, George Attwater, 148 Milton St., Brooklyn, N. Y. (51).

Tiffany, Chas. L., Fifth Ave. and 37th St., New York, N. Y. (57).

Tiffany, Flavel B., M. D., 805 McGee St., Kansas City, Mo (58). K

Tiffany, Louis C., 401 Fifth Ave., New York, N. Y. (50).

*Tight, William George, President, University of New Mexico, Albuquerque, N. M. (39). 1900. E

*Tilghman, B. C., 2210 St. James Place, Philadelphia, Pa. (54). 1906.

*Tillman, Col. Samuel E., U. S. A., Prof. Chemistry, Mineralogy and Geology, West Point, N. Y. (54). 1906. B C E

*Tilton, Prof. John Littlefield, Simpson College, Indianola, Iowa. (50). 1906. E

Timolat, J. G., 24 Tompkins Ave., New Brighton, S. I., N.Y. (57).

*Tingle, Dr. J. Bishop, McMaster Univ., Toronto, Canada. (50). 1903. C

Titchener, E. B., Professor of Psychology, Cornell University, Ithaca, N. Y. (51). 1902. H

*Tittmann, Otto H., Supt. U. S. C. and G. Survey, Washington, D. C. (24). 1888. A

Titus, E., Jr., 10 E. 70th St., New York, N. Y. (50).

*Titus, E. S. G., Assoc. Entomologist, Agric. Exper. Station, Logan, Utah. (50). 1906. F

Toch, Maximilian, 261 W. 71st St., New York, N. Y. (57). C

Todd, Albert M., Kalamazoo, Mich. (37). C

*Todd, Prof. David, Director, Lawrence Observatory, Amherst College, Amherst, Mass. (27). 1881. A B D

*Todd, Prof. James E., State Univ., Vermillion, S. Dak. (22). 1886. E F

Todd, J. H., M. D., Christmas Knoll, Wooster, Ohio. (48). K

Todd, William J., M. D., Mt. Washington, Baltimore, Md. (51). K

Tonnele, Theodore, Metallurgical Engineer, 919 College Ave., Pittsburg, Pa. (50). E

*Torrey, Harry Beal, Ph. D., Asst. Prof. of Zoology, University of California, Berkeley, Cal. (52). 1905. F

Totman, David M., M. D., 303 Montgomery St., Syracuse, N. Y. (50). K

*Tower, Olin F., Ph. D., Professor of Chemistry, Adelbert College, Cleveland, Ohio. (50). 1903. C

*Tower, Ralph Winfred, Ph. D., Curator of Physiology, Am. Mus. Natural History, New York, N. Y. (52). 1905. K

Tower, William Lawrence, Zoology Bldg., Univ. of Chicago, Chicago, Ill. (55). F

*Towle, William Mason, Clarkson School of Technology, Potsdam, N. Y. (44). 1902. D

*Townley, Sidney Dean, 575 Lincoln Ave., Palo Alto, Cal. (53). 1906. A

Townsend, Miss Anna B., 118 Lambert St., Philadelphia, Pa. (52). F G

Townsend, C. H., New York Aquarium, Battery Park, N. Y. (58).

*Townsend, Charles O., U. S. Dept. Agriculture, Washington, D. C. (46). 1902. G

*Townsend, Edgar Jerome, 510 John St., Champaign, Ill. (54). 1906. A

Townsend John W., Bryn Mawr, Pa. (54).

*Tozzer, Alfred M., Ph. D., Peabody Mus., Cambridge, Mass. (58). 1908. H

Tracey, J. Irving, Teacher of Physics, Pennington Seminary, Pennington, N. J. (57). B

*Tracy, Samuel M., Biloxi, Miss. (27). 1881. G

Transeau, E. N., Ph. D., Dept. Botany, State Normal School, Charleston, Ill. (53). G

*Traphagen, Frank W., Ph. D., Professor of Metallurgy, Colorado School of Mines, Golden, Colo. (35). 1889. C E F

Treadwell, Aaron L., Prof. of Biology, Vassar College, Poughkeepsie, N. Y. (57). F

Treat, Erastus B., 942 St. Nicholas Ave., New York, N. Y. (29). F I

*TRELEASE, WM., PH. D., Director, Missouri Botanical Gardens, St. Louis, Mo. (39). 1891. G

Tremoulet, J. Sydney, Local Manager, Grasselli Chemical Co., P. O. Box 1108, New Orleans, La. (55). C

Trotter, Dr. Spencer, Swarthmore College, Swarthmore, Pa. (55). E H

Trowbridge, Arthur C., 5618 Drexel Ave., Chicago, Ill. (58.

*Trowbridge, Augustus, Ph. D., Princeton Univ., Princeton, N. J. (47). 1900. B

*Trowbridge, Charles Christopher, Tutor in Physics, Columbia University, New York, N. Y. (50). 1901. B

Trowbridge, Mrs. Luther H., 304 99th St., New York, N. Y. (58).

True, A. C., Ph. D., Director, Office of Experiment Stations, U. S. Dept. Agriculture, Washington, D. C. (52).

*True, Fred. W., U. S. National Museum, Washington, D. C. (28). 1882. F

*True, Rodney Howard, U. S. Dept. Agriculture, Washington, D. C. (46). 1899. G

Truesdell, George, Room 22, Wyatt Building, Washington, D. C. (49). I

Truman, James, D. D. S., Dept. of Dentistry, University of Pennsylvania, 4505 Chester Ave., Philadelphia, Pa. (54).

Tucker, Miss Arabella H., Professor of Botany, State Normal School, Worcester, Mass. (54). G

Tucker, C. E., Joppa, Ill. (58).

Tucker, George M., Ph. D., Manager, Tucker Plant Breeding Farm, Blodgett, Mo. (53). C

Tucker, Colonel N. Beverley, Professor of Geology and Associate Professor of Chemistry, Virginia Military Institute, Lexington, Va. (55). C E

*Tucker, Richard Hawley, C. E., Astronomer, Lick Observatory, Mt. Hamilton, Cal. (50). 1902. A D

Tucker, William Albert, University Park, Denver, Colo. (51). G

Tucker, William Conquest, Civil and Sanitary Engineer, 156 Fifth Ave., New York, N. Y. (51). D

*Tucker, Willis Gaylord, M. D., Albany Medical College, Albany, N. Y. (29). 1888. C K

*TUCKERMAN, ALFRED, Ph. D., 342 W. 57th St., New York, N. Y. (39). 1891. C

*Tuckerman, Louis Bryant, Jr., Dept. Physics, University of Nebraska, Lincoln, Neb. (50). 1906. A B

Tuckerman, Paul, 59 Wall St., New York. N. Y. (57).

*Tufts, Frank Leo, Ph. D., Tutor in Physics, Columbia University, New York, N. Y. (50). 1901. B

Tunstall, Whitmell Pugh, 1706 19th St., N. W., Washington, D. C. (52). D

Tuohy, John, Cor. G. and Tulare Sts. Tulare, California. (50). D I

Turck, Fenton B., M. D., 1820 Michigan Ave., Chicago, Ill. (51). K

Turnbull, Thomas, Jr., M. D., Asst. Professor of Practice of Medicine, Allegheny University, Allegheny, Pa. (50). F K

*Turneaure, Frederic Eugene, Professor of Bridge and Sanitary Engineering, University of Wisconsin, Madison, Wis. (51). 1906. D

*Turner, Arthur Bertram, Ph. D., College of City of New York, New York, N. Y. (52). 1906. A

Turrentine, J. W., 804 E. Seneca St., Ithaca, N. Y. (53). C

*Tuttle, Prof. Albert H., University of Virginia, Charlottesville, Va. (17). 1874. F

Tweedy, Miss Alice B., 417 West 120th St., New York, N. Y. (49).

*Twitchell, E., Wyoming, Ohio. (39). 1891. C

*Tyler, Ansel Augustus, Ph. D., Professor of Natural Science, Bellevue College, Bellevue, Neb. (50). 1906.

Tyler, Chas. R., 402 W. 23d St., New York, N. Y. (57). C

Tyler Frederick Jared, U. S. Dept. of Agriculture, Washington, D. C. (54). G

*Tyler, Dr. Harry W., 491 Boylston St., Boston, Mass. (47). 1906. A

*Tyrrell, Joseph Burr, Mining Engineer, 87 Binscarth Rd., Toronto, Canada. (50). 1903. D E

*Udden, Johan August, 1000 38th St., Rock Island, Ill. (54). 1906. E

*Uhler, Dr. Philip R., 254 W. Hoffman St., Baltimore, Md. (19). 1874. E F

Uihlein, August, 332 Galena St., Milwaukee, Wis. (51).

Ullmann, H. M., Asst. Prof. Analytical and Industrial Chemistry, Lehigh University, So. Bethlehem, Pa. (54). C

Ulrey, Albert B., A. M., Prof. of Biology, University of Southern California, Los Angeles, Cal. (54). F

Underhill, Anthony Lispenard, The Hamilton, Madison, Wis. (58).

*Underwood, William Lyman, Lecturer on Biology, Mass. Institute of Technology, Boston, Mass. (51). 1906. F K

*Updegraff, Milton, U. S. Naval Academy, Annapolis, Md. (40). 1895. A

*Upham, Warren, Secy., Minnesota Historical Society, St. Paul, Minn. (25). 1880. E

*Upton, Winslow, Ladd Observatory, Providence, R. I. (29). 1883. A

Usher, Susannah, Univ. of Illinois, Urbana, Ill. (58).

*Vail, Miss Anna Murray, 29 Washington Square, New York, N. Y. (50). 1906.

Vaile, Joel F., 420 Equitable Building, Denver, Colo. (50). I

Valentine, Edw. P., 411 E. Franklin St., Richmond, Va. (33). H

Valentine, Ferdinand C., M. D., 171 West 71st St., Manhattan, N. Y. (57). K

Valentine, Morris Crawford, Instructor in Biology, Wadleigh High School, 259 West 131st St., New York, N. Y. (52). F K

Valle, Felipe, Observatorio Astronomico Nacional, Tacubaya, Mex. (54). A

Vallé, Jules F., M. D., 4955 Maryland Ave., St. Louis, Mo. (51). K

*Van Amringe, John Howard, Professor of Mathematics, Columbia University, New York, N. Y. (50). 1901. A

Van Antwerp, Rev. Francis J., 26 Harper Ave., Detroit, Mich. (46).

Van Arsdale, Miss May Belle, Instructor in Physical Science, Teachers College, 457 West 123d St., New York, N. Y. (56). B

VAN BEUREN, FREDERICK T., M. D., 51 West 52d St., New York, N. Y. (36).

Van Cortlandt, R. B., 30 Pine St., New York, N. Y. (57).

Van den Burg, Wm. H., 30 W. 48 St., New York, N. Y. (57).

Vanderbilt, Cornelius, 30 Pine St., New York, N. Y. (51). D

Vanderlaan, J., M. D., 200 S. Terrace St., Muskegon, Mich. (51). K

Vanderpoel, Frank, Ph. D., 175 Park Ave., Orange, N. J. (50). F K

*Van Dine, Delos Lewis, Entomologist, U. S. Experiment Station, Honolulu, H. T. (51). 1906. F

Van Duyn, John, M. D., 318 James St., Syracuse, N. Y. (50). **F K**

*Van Dyck, Francis Cuyler, Rutgers College, New Brunswick, N. J. (28). 1882. **B C F**

Van Dyck, William Van Bergen, 84 College Ave., New Brunswick, N. J. (50). **D**

Van Epps, Clarence, Iowa City, Iowa. (58).

*Van Hise, Charles R., Univ. of Wisconsin, Madison, Wis. (37). 1890. **E**

*Van Hook, James M., Bloomington, Ind. (56). 1908. **G**

VAN HORN, FRANK ROBERTSON, Prof. of Geology and Mineralogy, Case School of Applied Science, Cleveland, Ohio. (57). **E**

Van Ingen, Philip, 125 East 71st St., New York, N. Y. (57).

*Van Name, Willard Gibbs, care G. and C. Merriam Co., Springfield, Mass. (54). 1906.

Van Norden, Warren, 786 Fifth Ave., New York, N. Y. (57).

*Van Ornum, John Lane, Professor of Civil Engineering Washington University, St. Louis, Mo. (50). 1903. **D L**

Van Sinderen, Howard, 14 West 16th St., New York, N. Y. (57).

*Van Slyke, Lucius L., Agr. Exper. Station, Geneva, N. Y. (41). 1901. **C**

Van Trump, Isaac, 1245 Stock Exchange Bldg., Chicago, Ill. (58). **C**

Van Valkenburg, Hermon L., care of Walker Electric Co., 2318 Noble St., Philadelphia, Pa. (51). **D**

Van Vleck, Edward B., Prof. Mathematics, Univ. of Wis., Madison, Wis. (57). **A**

*Van Vleck, Prof. John M., Wesleyan University, Middletown, Conn. (23). 1875. **A**

Van Winkle, Edgar B., 115 E. 70th St., New York, N.Y. (49).

Varney, A. L., Col. U. S. A., Retired, 5719 Howe St., Pittsburg, Pa. (44). **H**

*Vaughan, T. Wayland, U. S. Geological Survey, Washington, D. C. (52). 1906. **E**

*VAUX, GEORGE, JR., 404 Girard Building, Philadelphia, Pa. (33). 1906. **A E**

Vawter, C. E., Jr., Dept. of Physics, Va. Polytechnic Inst., Blacksburg, Va. (57). **B**

*Veatch, Arthur Clifford, U. S. Geological Survey, Washington, D. C. (52). 1907. **E**

Veazie, Henry Augustus, M. D., 1305 St. Mary St., New Orleans, La. (55). **K**

Vedder, Edward B., 1st Lieut. and Asst. Surgeon, Fort Walla Walla, Wash. (57). **K**

Veeder, Curtis Hussey, Mechanical Engineer, 40 Willard St., Hartford, Conn. (50). **B D**

*Venable, Prof. F. P., University of North Carolina, Chapel Hill, N. C. (39). 1891. C

Venable, Wm. Mayo, 3649 Vineyard Place, Cincinnati, Ohio. (50). D

Verhoeff, Frederick Herman, 233 Charles St., Boston, Mass. (56). K

Ver Planck, William G., 149 Broadway, New York, N. Y. (57).

*Verrill, Prof. Addison E., 86 Whalley Ave., New Haven, Conn. (47). 1898. F

Vickery, Roy Albion, St. Anthony Park, Minnesota. (58).

Vickroy, W. R., 2901 Rauschenbach Ave., St. Louis, Mo. (58).

Viereck, Henry Lorenz, P. O. Box 756, Harrisburg, Pa. (58). F

Vietor, Agnes C., M. D., Trinity Court, Boston, Mass. (57). K

Viles, James, Lake Forest, Ill. (58).

Villard, Mrs. Henry, 145 W. 58th St., New York, N. Y. (36).

Villarello, Juan D., 5a Cipres No. 2728, Mexico, D. F. (57). E

Vinal, W. Irving, 1106 East Capitol St., Washington, D. C. (40). E

Vincent, George E., 5737 Lexington Ave., Chicago, Ill. (58)

*Vincent, Swale, Prof. of Physiology, Univ. of Manitoba, Winnipeg Canada. (57). 1908. K

*Vogdes, A. W., Brig.-Gen. U. S. A., San Diego, Cal. (32). 1885. E F

Vogt, Frederick A., Principal of Central High School, Buffalo, N. Y. (53).

Voje, John Henry, M. D., Proprietor, Waldheim Park, Oconomowoc, Wis. (51). K

von Berge, Henry de R., Perry and Mississippi Sts., Buffalo, N. Y. (57). C

von Herrmann, C. F., Weather Bureau Office, Erie, Pa. (51). B

von Hoffmann, Charles, M. D., 2611 California St., San Francisco, Cal. (51). K

von Ihering, Dr. H., Director, Museu Paulista, Caixa g, Sao Paulo, Brazil. (51).

von Isakovics, Alois, Synfleur Scientific Laboratories, Monticello, N. Y. (55). C

von Mansfelde, Alexander S., M. D., "Quality Hill," Ashland, Neb. (50). F G H K

von Schmid, J. O., 30 West 10th St., New York, N. Y. (57).

*von Schrenk, H., Missouri Botanical Garden, St. Louis, Mo. (49) 1901. G

von Wackerbarth, Henry, 9737 Longwood Boulevard, Chicago, Ill. (58).

Voorhees, Louis Augustus, 111 Carroll Place, New Brunswick, N. J. (57) C

Voorhees, S. S., Engineer of Tests, U. S. Treasury Dept., Washington, D. C. (57). D

Voris, Floyd Thomas, Park Lane, Des Moines, Iowa. (50). B C

Votey, J. William, Professor of Civil Engineering, University of Vermont, Burlington, Vt. (50). D

*Vreeland, Frederick K., 39 South Fullerton Ave., Montclair, N. J. (50). 1908. B D G

Vroman, Charles E., 54 Walton Place, Chicago, Ill. (58).

Wackenhuth, F. C., Jr., Technical Brewer, 57 Freeman St., Newark, N. J. (53). G

Waddell, John, Asst. Prof. of Chemistry, School of Mining, Kingston, Ontario. (57). C

Waddell, Montgomery, Civil and Electrical Engineer, 1 West 101st St., New York, N. Y. (51). D

Wade, Harold Rollins, Bur. of Soils, U. S. Dept. Agric., Washington, D. C. (58). C

Wade, John W., M. D., 318 N. Second St., Millville, N. J. (51). K

Wadman, W. E., 102 Lord Ave., Bayonne, N. J. (50).

*Wadsworth, F. L. O., Dir. Allegheny Observatory, Western University of Pennsylvania, Allegheny, Pa. (52). 1903. A B

Wadsworth, Herbert, 1801 Massachusetts Ave. N.W., Washington, D. C. (52). H I

*Wadsworth, M. Edw., Ph. D., Dean of School of Mines and Metallurgy, and Professor of Mining and Geology, Penna. State Coll., State College, Pa., also Dean of School of Mines and Prof. of Mining Geology in Western University of Pennsylvania, Pittsburg, Pa. (23). 1874. E

*Wadsworth, Oliver F., 526 Beacon St., Boston, Mass. (52). 1906. K

Wadsworth, William Austin, Geneseo, N. Y. (50). G

Wadsworth, William S., M. D., The Normandie, 36th and Chestnut Sts., Philadelphia, Pa. (54). K

*Wagner, Frank C., Rose Polytechnic Institute, Terre Haute, Ind. (34). 1897. D

Wagner, George, Instructor in Zoology, University of Wisconsin, Madison, Wis. (46). F G

*Wagner, Samuel, President of Wagner Free Institute of Science, Greenbank Farm, West Chester, Pa. (51). 1906.

Wahrer, C. F., M. D., 1007 Fifth St., Ft. Madison, Iowa. (53). K

*Waidner, Charles W., Dept. Com. of Labor, Bureau of Standards, Washington, D. C. (52). 1906. B

Wainwright, Jacob T., Metallurgical Engineer, P. O. Box 774, Chicago, Ill. (51). B D E

*Wait, Charles Edmund, Professor of Chemistry, Univ. of Tennessee, Knoxville, Tenn. (51). 1906. C

Waite, Edward B., Head of Instruction Dept., Amer. School of Correspondence, Chicago, Ill. (58).

*Waite, Frederick Clayton, Ph. D., Prof. of Histology and Embryology, Western Reserve Univ., Cleveland, Ohio. (50). 1906. **F K**

*Waite, M. B., U. S. Dept. Agriculture, Washington, D. C. (37) 1893. **G**

Wakefield, Homer, M. D., 501 W. 120th St., New York, N. Y. (54).

*Wakeman, Alfred J., 67 Lafayette Place, Greenwich, Conn. (55). 1908. **C K**

*Walcott, Charles D., Secy. Smithsonian Institution, Washington D. C. (25). 1882. **E F**

*Waldo, Prof. Clarence A., Purdue University, Lafayette, Ind. (37). 1889. **A**

Waldo, Hon. Geo. E., M. C., 290 Broadway, New York. (57). **I**

Wales, Charles M., M. E., 11 Broadway, New York, N. Y. (51). **D**

*Walker, Buz M., Prof. of Mathematics, Agricultural College, Miss. (57). 1908. **A**

Walker, Byron Edmund, Toronto, Can. (38). **E**

Walker, Emma E., 29 E. 29th St., New York N. Y. (57).

Walker, Ernest, Professor of Horticulture, University of Arkansas, Fayetteville, Ark. (52).

*Walker, Percy H., Bureau of Chemistry, Dept. of Agriculture Washington, D. C. (55). 1908. **C**

WALKER, R. M., 713 Prudential Bldg., Atlanta, Ga. (52). **D**

Walker, T. B., Pres. Minneapolis City Library Board, 807 Hennepin Ave., Minneapolis, Minn. (51).

Walker, Wm. Hultz, Ph. D., Professor of Industrial Chemistry, Mass. Institute of Technology, Boston, Mass. (53). **C**

*Wallace, Henry, Editor, Wallace's Farmer, Des Moines, Iowa. (54). 1907. **I**

*Wallace, Robert James, Photographer, Yerkes Observatory, Williams Bay, Wis. (53). 1908. **A**

Waller, Coleman Bailey, Ph. D., Dept. Chemistry and Biology, Wofford College, Spartanburg, S. C. (51). **A B C**

*WALLER, E., 7 Franklin Place, Morristown, N. J. (23). 1874.

Wallerstein, M., Ph. D., Technical Chemist, 105 E. 91st St., New York, N. Y. (53). **C**

Wallin, J. E. Wallace, Prof. of Psychology and Pedagogy, State Normal School, East Stroudsburg, Pa. (57). **H**

Wallis, William F., In charge of U. S. Magnetic Observatory, Ewa, Oahu, Hawaii. (56). **B**

Walsh, James J., M. D., LL.D., Lecturer on Medicine, New York Polyclinic, 110 West 74th St., New York, N. Y. (51). **K**

WALSH, THOMAS F., Le Roy and Phelps Place, Washington, D. C. (49). **D**

Walsh, W. E., M. D., Morris, Ill. (58). K

Walter, Miss Emma, 109 North 16th St., Philadelphia, Pa. (50). E

Walter, Herbert Eugene, Ph. D., Asso. Prof. Comp. Anatomy, Brown University, Providence, R. I. (57). F

WALTERS, FRANK, South Sandisfield, Mass. (56). F G H

Walton, Lyman A., 5737 Woodlawn Ave., Chicago, Ill. (58).

*Walton, L. B., Professor of Biology, Kenyon College, Gambier, Ohio. (53). 1908. F

*Wanner, Atreus, York, Pa. (36). 1890. H

Warbasse, James, 67 Irving Place, Passaic, N. J. (54). I

Warburton, Fred'k J., 130 New York Ave., Brooklyn, N. Y. (57).

Ward, Chas., Charleston, W. Va. (57).

WARD, CHAS. WILLIS, Queens, Long Island, N. Y. (57).

Ward, Delancey W., Ph. D., 163 Madison Ave., Flushing, Long Island, N. Y. (51). C

Ward, Frank A., 16-26 College Ave., Rochester, N. Y. (40).

*Ward, Dr. Henry B., Dean of Medical Faculty, University of Nebraska, Lincoln, Neb. (48). 1899. F K

*Ward, Henry L., Director, Milwaukee Public Museum, Milwaukee, Wis. (51). 1906. E F H

Ward, J. Langdon, 120 Broadway, New York, N. Y. (29). I

*Ward, Lester F., Brown University, Providence, R. I. (26). 1879. E G

Ward, Louis Clinton, Box 11, Huntington, Ind. (51). E

*Ward, R. H., M. D., 53 Fourth St., Troy, N. Y. (17). 1874. F G

Ward, Sidney G., Electrical Engineer, 825 Ayars Place, Evanston, Ill. (58).

Ward, Willard Parker, Ph. D., Mining Engineer, 164 W. 58th St., New York, N. Y. (50). D E

Warden, Carl C., M. D., 23 Beach St., Battle Creek, Mich. (58).

Warder, Charles Barclay, M. D., 1715 Walnut St., Philadelphia, Pa. (51). K

Wardle, Harriet N., Academy of Natural Sciences, Philadelphia, Pa. (47). E H

Ware, Miss Mary Lee, 41 Brimmer St., Boston, Mass. (47).

*Ware, Wm. R., Adams St., Milton, Mass. (36). 1901. D

Warman, P. C., Geological Survey, Washington, D. C. (53). G

*WARNER, JAMES D., 463 E. 26th St., Flatbush, Brooklyn, N. Y. (18). 1874. A B

*Warner, Worcester R., 1722 Euclid Ave., Cleveland, Ohio. (33). 1888. A B D

*Warren, Charles H., Ph. D., Instructor in Mineralogy, Mass. Inst. Tech., Boston, Mass. (52). 1906. E

Warren, Edward R., 20 West Caramillo St., Colorado Springs, Colo. (57). F

Warren, Geo. F., Ph. D., Asst. Prof. Agronomy, Cornell Univ., Ithaca, N. Y. (52).

Warren, Homer S., M. D., 103 State St., Chicago, Ill. (58).

*Warren, Howard C., Prof. of Psychology, Princeton University, Princeton, N. J. (46). 1901. H K

*Warren, Joseph W., M. D., Bryn Mawr, Pa. (31). 1886. F

*Warren, S. Edward, Newton, Mass. (17). 1875. A I

Warren, William R., 68 William St., New York, N. Y. (49).

Warrington, James N., 1419 Dominis St., Honolulu, H. T. (34). A B D

Washburn, Charles Grenfill, 314 Main St., Worcester, Mass. (54).

*Washburn, Frederic Leonard, State Entomologist, 1112 6th St. S. E., Minneapolis, Minn. (51). 1906. F

Washburn, George Hamlin, M. D., Prof. of Obstetrics, Tufts Medical School, Boston, Mass. (54). K

*Washburne, Alva Courtenay, Actuary, Hartford Life Insur. Co., Hartford, Conn. (54). 1907. A

Washington, Charles Milnor, 58 W. 57th St., New York, N. Y. (52). K

*Washington, Dr. Henry S., Consulting Geologist and Chemist, 95 Liberty St., New York, N. Y. (44). 1897. E

Wassall, Joseph W., Lake Forest, Ill. (58).

*Waterman, Frank Allan, Prof. of Physics, Smith College, Northampton, Mass. (54). 1906. B

Waterman, Warren Gookin, Prof. of Physics and Geology, Fisk University, Nashville, Tenn. (53). B E

*Waters, C. E., Bureau of Standards, Washington, D. C. (52). 1906. C

Waters, Theodore, 1200 E. Wash. Lane, Philadelphia, Pa. (54). I

Watjen, Louis, 68 Broad St., New York, N. Y. (57).

Watkins, Howard R., Asst. Chemist, Agri. Exper. Sta., Pullman, Wash. (57). C

Watson, Benj. Marston, Bussey Institution, Jamaica Plain, Mass. (50).

Watson, Miss C. A., North Andover, Mass. (31). D

Watson, Floyd Rowe, Asst. Prof. of Physics, Univ. of Ill., 907 West California Ave., Urbana, Ill. (58). B

Watson, Frank E., 1172 Tinton Ave., New York, N. Y. (57).

Watson, Frank Elbert, De Pauw Univ., Greencastle, Ind. (51). F

Watson, J. Henry, 51 West 75th St., New York, N. Y. (57).

Watson, Joseph Ralph, Albuquerque, New Mexico. (50). F G

*Watson, Thomas A., Weymouth, Mass. (42). 1906. E

Watson, W. F., Furman University Laboratory, Greenville, S. C. (56). F

*WATSON, PROF. WM., 107 Marlborough St., Boston, Mass. (12). 1884. A

Watts, William Lawrence, Am. Palace Car Co., 27 William St., New York, N. Y. (52). A

Waugh, James Church, 5012 12th Ave., University Station, N. E., Seattle, Wash. (52).

*Wead, Charles K., U. S. Patent Office, Washington, D. C. (47). 1898. B

Weaver, Edwin Oscar, Professor of Physics, Wittenberg College, Springfield, Ohio. (51). B F G

Weaver, George H., M. D., 535 Washington Bldg., Chicago, Ill. (58). K

*Webb, Prof. J. Burkitt, Hoboken, N. J. (31). 1883. A B D

*Webb, Prof. J. Burkitt, Cons'ltg Eng. in Mathematics, Mechanics and Physics, Hoboken, N. J. (31). 1883. A B D

*Webber, Herbert J., Prof. of Expr. Plant Biology, Cornell University, Ithaca, N. Y. (47). 1900. G

*Weber, Prof. Henry A., Ohio State Univ., Columbus, Ohio. (35). 1888. C

Weber, Leonard, M. D., 25 West 46th St., New York, N. Y. (57). K

Weber, Raxley Ferrin, McKinley High School, St. Louis, Mo. (57). C E

Webster, Albert Lowry, C. E., Consulting Civil and Sanitary Engineer, 82 Wall St., New York, N. Y. (50). C D

*Webster, Prof. Arthur Gordon, Clark University, Worcester Mass. (47). 1898. A B

Webster, Edgar H., Professor of Physical Science, Atlanta University, Atlanta, Ga. (50). B

*Webster, F. M., U. S. Dept. Agriculture, Washington, D. C. (35). 1890. F

Webster, Frederic S., News Boys' Home, Grant and Webster Ave., Pittsburg, Pa. (51). E F H

Webster, Dr. R. W., 100 State St., Chicago, Ill. (57). C

Weckel, Miss Ada Louise, Moline, Ill. (58). F

*Weed, Clarence M., Ph. D., State Normal School, Lowell, Mass. (38). 1890. F

Weed, George M., Minot Bldg., 113 Devonshire St., Boston, Mass. (54). I

Weed, Henry T., Manual Training High School, 181 Prospect Park, West, Brooklyn, N. Y. (54). B C

Weed, J. N., 244 Grand St., Newburgh, N. Y. (37). E I

*Weed, W. H., 100 E. Ave., Norwalk, Conn. (52). 1903. E

Weeks, Edwin Ruthven, Consulting Engineer, 604 New Nelson Bldg., Kansas City, Mo. (50). A B D I

Weeks, Henry Clay, Engineer in Economics, Bayside, L. I., N. Y. (57). **D**

*Weeks, Rufus Wells, 346 Broadway, New York, N. Y. (54). 1906. **I**

*Weems, J. B., Ph. D., Crewe, Va. (44). 1900. **C**

*Weems, Mason Locke, B. A., Instructor in Physiology, Valparaiso College, Valparaiso, Ind. (52). **K**

Wehle, Theo., 59 West 83d St., New York, N. Y. (57).

*Weidman, Samuel, Geologist, Wisconsin State Geological and Natural History Survey, Madison, Wis. (53). 1906. **E**

Weil, Richard, A. M., M. D., 163 West 86th St., New York, N. Y. (58). **K**

Weimer, Edgar A., M. E., Supt. Weimer Machine Works Co., Lebanon, Pa. (51). **D**

Weinberger, William, M. D., 252 Willis Ave., New York, N. Y. (58). **K**

Weingarten, Frederick S., B. S., 32 W. 94th St., New York, N. Y. (57). **K**

*Weinzirl, John, Univ. of Washington, Seattle, Wash. (45). 1906. **G**

Weis, Joseph D., M. D., 1448 Jackson Ave., New Orleans, La. (54). **K**

*Welch, William Henry, M. D., 807 St. Paul St., Baltimore, Md. (47). 1900. **F H K**

*Weld, Laenas Gifford, Dean of Graduate College, State University of Iowa, Iowa City, Iowa. (41). 1895. **A**

Weld, Lewis H., Teacher of Biology, Northwestern Academy, 1107 Ayars Place, Evanston, Ill. (58).

Welin, John E., Professor of Physics, Chemistry and Geology, Bethany College, Lindsborg, Kansas. (50). **B C E**

*Weller, Stuart, Assoc. Prof. of Paleontologic Geology, University of Chicago, Chicago, Ill. (54). 1906. **E F**

Wellman, Dr. F. Creighton, care of Mr. H. K. Lewis, 136 Gower St., London, W. C., England. (58).

Wells, C. W., 71 Broadway, New York, N. Y. (57).

Wells, Eliab Horatio, M. D., Professor of Natural Science, Baylor Female College, Belton, Texas. (50). **F K**

Wells, Fred Latimer, 116 So. Clinton St., Chicago, Ill. (58).

Wells, F. Lyman, McLean Hospital, Waverly, Mass. (54). **H K**

Wells, H. Edward, Washington & Jefferson College, Washington, Pa. (54). **C**

Wells, Prof. H. Gideon, M. D., Ph. D., Assistant Professor Pathology, Univ. of Chicago, Chicago, Ill. (57). **K**

WELSH, FRANCIS RALSTON, 328 Chestnut St., Philadelphia, Pa. (51).

*Wendell, Oliver Clinton, Assistant Professor of Astronomy, Harvard College Observatory, 85 Reservoir St., Cambridge, Mass. (56). 1908. **A**

Wending, Hon. Geo. R., Charlestown, West Va. (52). I
Wenner, Frank, Bur. of Standards, Washington, D. C. (54). B
Wentworth, Irving H., 4a Calle de Hidalgo, No. 9 Saltillo, Coahuila, Mexico. (54).
Werk, Louis Michael, Werk Place, Westwood, Cincinnati, Ohio. (56).
*Wernicke, Professor Paul. (44.) 1906. A B
*Wesbrook, Frank Fairchild, University of Minnesota, Minneapolis, Minn. (54). 1906. K
Wescott, William Carter, Pacific Ave., cor. Delaware Ave., Atlantic City, N. J. (58). K
Wesendouck, Walter, 86–88 Worth St., New York, N.Y. (57).
Wessler, Harry, 315 East 58th St., New York, N. Y. (57). K
Wesson, David, 111 S. Mountain Ave., Montclair, N. J. (50). C
West, Augustus Price, Ph. D., 2204 Maryland Ave., Baltimore, Md. (55).
West, James Alexander, Asst. to the Ill. State Entomologist, Nat'l History Hall, Urbana, Ill. (58). F
West, Thomas Dyson, M. E., Mgr., T. D. West Engineering Co., Sharpsville, Pa. (51). D
*Westgate, Lewis Gardner, Ph. D., Professor of Geology, Ohio Wesleyan University, Delaware, Ohio. (51). 1906. E
*Westinghouse, George, Pittsburg, Pa. (50). 1902. D
Westinghouse, Henry Herman, 2014 Trinity Bldg., New York, N. Y. (51). D
Weston, David Brainard, 320 Harvard St., Cambridge, Mass. (57). C
*Weston, Edward, Sc. D., LL. D., 645 High St., Newark, N. J. (33). 1887. B C D
Wetherill, H. Emerson, M. D., 3734 Walnut St., Philadelphia, Pa. (53). K
Wetmore, Maj. Wm. Boerum, Allenhurst, N. J. (57).
Wetzel, Reinhard A., Columbia Univ., New York, N. Y. (53). B
Wetzler, Joseph, 240–242 W. 23d St., New York, N. Y. (36).
*Weysse, Arthur W., Professor of Biology, Boston University, Boston, Mass. (52). 1905. F
Wheatland, Marcus F., M. D., 84 John St., Newport, R. I. (51). H K
*Wheeler, Alvin Sawyer, Ph. D., Associate Professor of Chemistry, University of North Carolina, Chapel Hill, N. C. (50). 1901. C
*Wheeler, Chas. Fay, U. S. Department Agriculture, Washington, D. C. (52). 1906. G
*Wheeler, Henry Lord, Sheffield Scientific School, Yale Univ., New Haven, Conn. (50). 1901. C
Wheeler, Herbert L., 12 West 46th St., New York, N.Y. (57). F

Wheeler, Homer J., Ph. D., Director and Chemist, R. I. Exper. Station, Kingston, R. I. (54). **C E**

Wheeler, Horace Leslie, Sheffield Scientific School, New Haven, Conn. (52). **A E**

Wheeler, Schuyler Skaats, Crocker-Wheeler Co., Ampere, N. J. (50). **D**

Wheeler, William, C. E., Concord, Mass. (41). **D**

*Wheeler, Dr. William Morton, American Museum of Natural History, New York, N. Y. (50). 1901. **F**

WHEELOCK, WM. E., M. D., Morristown, N. J. (57). **K**

Wheelwright, Wm. D., Portland, Oregon. (57).

WHELPLEY, HENRY MILTON, M. D., Professor of Materia Medica and Pharmacy, Washington University, St. Louis, Mo. (52). **H K**

Whelpley, James D., Cosmos Club, Washington, D. C. (52). **I**

Wherry, Edgar T., 1729 Norris St., Philadelphia, Pa. (57). **C E**

*Whetzel, Herbert Hice, Assistant Professor of Botany, New York State College of Agriculture, Forest Home, Ithaca, N. Y. (56). 1908. **G**

*Whipple, George C., Consulting Engineer, 103 Park Ave., New York, N. Y. (54). 1906. **D**

Whipple, Guy Montrose, Prof., Univ. of Missouri, Columbia, Mo. (58). **L**

White, Charles H., U. S. N., Center Sandwich, N. H. (34). **C**

*White, David, U. S. Geol. Survey, Washington, D. C. (40). 1892. **E F**

*White, Horace, Editor "New York Evening Post," 18 W. 69th St., New York, N. Y. (50). 1901. **I**

*White, H. C., Ph. D., University of Georgia, Athens, Ga. (29). 1885. **C**

*WHITE, PROF. I. C., State Geologist of West Virginia, Morgantown, W. Va. (25). 1882. **E**

White, LeRoy S., 19 Buckingham Ave., Waterbury, Conn. (23).

White, Mrs. N. G., 1615 New Hampshire Ave. N. W., Washington, D. C. (52).

White, Oscar W., 1116 F St. N.W., Washington, D. C. (52). **D**

White, Walter Henry, M. D., 220 Marlborough St., Boston, Mass. (51). **K**

White, W. T., 508 Broad St., Knoxville, Tenn. (58). **B C**

Whitehorne, Wm. Risby, Ph. D., Prof. of Physics, Bates College, Lewiston, Me. (52). **B C**

*Whitfield, J. Edward, 406 Locust St., Philadelphia, Pa. (44). 1896. **C**

*Whitfield, R. P., Amer. Mus. Nat. History, Central Park, New York, N. Y. (18). 1874. **E F H**

Whitford, Harry Nichols, Ph. D., Bur. Forestry, Manila, P. I. (54). G

Whiting, Chas. Allen, M. D., 70 West 47th St., New York, N. Y (57). K

Whiting, S. B., 11 Ware St., Cambridge, Mass. (33). D

*Whiting, Miss Sarah F., Professor of Physics, Wellesley College, Wellesley, Mass. (31). 1883. AB

Whitley, R. L., Osage, Iowa. (58).

Whitman, Alfred A., 305 West 78th St., New York, N. Y. (57).

*Whitman, Prof. Charles O., University of Chicago, Chicago, Ill. (43). 1898. F

*Whitman, Prof. Frank P., Adelbert College, Cleveland, Ohio. (33). 1885. AB

Whitmore, F. E., Curator, Cortland Science Club, Cortland, N. Y. (54).

*Whitney, Miss Mary W., Vassar College Observatory, Poughkeepsie, N. Y. (47). 1900. A

Whitney, Solon Franklin, A. M, Public Library, Watertown, Mass. (52).

*Whitney, Willis Rodney, care General Electric Co., Schenectady, N. Y. (46). 1900. C

Whitson, A. R., Prof. of Soil Physics, University of Wisconsin, Madison, Wis. (58). B

*Whittelsey, Theodore, Ph. D., Continental Mexican Rubber Co., Torreon, Coahuila, Mexico. (53). 1906. C

Whittier, Frank Nathaniel, Bowdoin College, Brunswick, Me. (54). K

*Wickham, Henry F., Prof. of Entomology, State University, Iowa City, Iowa. (54). 1908. F

Wiechmann, F. G., Ph. D., P. O. Box 79, Sta. W., Brooklyn, N. Y. (50). F K

Wiedemann, H. Edmund, care of Kessler & Wiedemann, St. Louis, Mo. (58). C

*Wiegand, Karl McKay, Ph.D., Assoc., Prof. of Botany, Wellesley College, Wellesley, Mass. (45). 1899. G

Wieman, Harry Lewis, Lab. Asst. in Zoology, Univ. of Chicago, Chicago, Ill. (58). F

Wiener, Dr. Alex C., 100 State St., Chicago, Ill. (58). K

Wiggin, Frederick Holme, M. D., 55 W. 36th St., New York, N. Y. (57). K

Wight, Ambrose Benson, 5735 W. Lake Street, Chicago, Ill. (58).

Wight, William F., U. S. Dept. Agriculture, Washington, D. C. (54). C

Wightman, Merle J., Electrical Engineer, 302 Broadway, New York, N. Y. (50). D

Wilbour, Mrs. Charlotte B., 40 Central Park, South, New York, N. Y. (28).

*Wilbur, A. B., Middletown, N. Y. (23). 1874. E

Wilbur, M. T., 195 Broadway, New York, N. Y. (57).

*Wilbur, Ray Lyman, M. D., Assistant Professor of Physiology, Stanford Univ., Stanford University, Cal. (50). 1901. F K

Wilcox, Mrs. Aaron Morley, The Arlington, Washington, D. C. (52).

*Wilcox, Edwin Mead, Ph. D., Prof. of Botany, Ala. Polytechnic Institute, Auburn, Ala. (50). 1901. G

Wilcox, Miss Emily T., Middletown, Conn. (33). A B

Wilcox, Franklin A., care of Wilcox & Green, 1 Broadway, New York, N.Y. (57).

Wilcox, Guy Maurice, Professor of Physics, Armour Institute, Chicago, Ill. (53). B

Wilcox, Wendell Garrett, Professor of Chemistry, Alfred University, Alfred, N. Y. (56). C

*Wilder, Burt Green, Prof. of Neurology, Cornell University, Ithaca, N. Y. (51). 1902. F

*Wilder, Harris Hawthorne, Ph. D., Professor of Zoology, Smith College, Northampton, Mass. (52). 1905. F

Wilder, Wm. H., M. D., 359 East 58th St., Chicago, Ill. (58). K

Wiley, Andrew J., Consulting Engineer, Boise, Idaho. (51). D

*Wiley, Harvey W., Ph. D., U. S. Dept. Agriculture, Washington, D. C. (21). 1874. C

*Wiley, William H., C. E., 43 E. 19th St., New York, N. Y. (50). 1906. D E

Wildman, Edward E., 214 St. Marks Sq., Philadelphia, Pa. (57).

Wilkins, Miss Lewanna, Eastern High School, Washington, D. C. (52). F G

*Wilkinson, Levi Washington, Professor of Industrial and Sugar, Chemistry, Tulane University, New Orleans, La. (50). 1903. C

*Willard, Julius Terrass, Dir., Kans. State Exper. Sta., Manhattan, Kans. (50). 1906. C

Willcox, David, 20 Liberty St., New York, N. Y. (57).

*Willcox, Miss Mary Alice, Ph. D., Professor of Zoology, Wellesley College, Wellesley, Mass. (50). 1901. F

*Willcox, Walter F., Ph. D., Professor of Economics, Cornell University, Ithaca, N. Y. (50). 1901. I

Willett, James R., 434 W. Jackson Blvd., Chicago, Ill. (53). D

Williams, Anna Wessels, M. D., 549 Riverside Drive, New York, N. Y. (56). K

*Williams, Benezette, 153 La Salle St., Chicago, Ill. (33). 1887. D

*Williams, Charles H., M. D., 1069 Boylston St., Boston, Mass. (22). 1874.

Williams, Charles M., M. D., 48 East 49th St., New York, N. Y. (57). K

Williams, Mrs. Chauncey P., 284 State St., Albany, N. Y. (52).
*Williams, Clarke Benedict, Prof. of Mathematics, Kalamazoo College, Kalamazoo, Mich. (54). 1906. A
*Williams, Prof. Edw. H., Jr., Andover, Mass. (25). 1894. D E
*Williams, Francis H., M. D., 505 Beacon St., Boston, Mass. (29). 1890. K
Williams, Frank Blair, Ph. D., Clark University, Worcester, Mass. (53). D
Williams, Frank H., Greene, N. Y. (50). E
*Williams, Prof. Henry Shaler, Cornell University, Ithaca, N. Y. (18). 1882. E F
*Williams, Herbert U., M. D., Prof. of Pathology and Bacteriology, University of Buffalo, Buffalo, N. Y. (54). 1906. K
*Williams, Ira Abraham, Assoc. Prof., Mining Engineering, Iowa State College, Ames, Iowa. (52). 1908. D E
Williams, J. C., 221 Orchard St., Ridgeway, Pa. (51). E
Williams, John T., 7 East 67th St., New York, N. Y. (57). C D
*Williams, J. Whitridge, M. D., Professor of Obstetrics, Johns Hopkins University, Baltimore, Md. (50). 1901. F K
*Williams, Leonard Worcester, Harvard Medical School, Boston, Mass. (52). 1906. F
Williams, Mabel Clare, Ph. D., Dept. of Psychology, State University of Iowa, Iowa City, Iowa. (52). H
*Williams, Stephen Riggs, Professor of Biology, Miami University, Oxford, Ohio. (50). 1906. F
*Williamson, Edward Bruce, Bluffton, Ind. (50). 1906. F
Williamson, Homer D., M. D., Bank St., Lorain, Ohio. (51). K
Williamson, Mrs. M. Burton, 136 Magnolia Ave., Hollywood, Cal. (44). F
Willing, Mark Skinner, 110 Rush St., Chicago, Ill. (58).
*Willis, Bailey, U. S. Geological Survey, Washington, D.C. (36). 1890. E
*Williston, Arthur L., Director, Dept. Science and Technology, Pratt Institute, Brooklyn, N. Y. (51). 1906. D
*Williston, Dr. Samuel W., University of Chicago, Chicago, Ill. (51). 1902. F K
*Willoughby, Charles C., Peabody Museum, Cambridge, Mass. (45). 1897. H
*Wills, Dr. Albert P., Instructor in Mechanics, Columbia University, New York, N. Y. (53). 1906. A B
Wills, J. Lainson, F. C. S., Analytical and Technical Chemist, 402 W. 23d St., New York, N. Y. (50). B C F
WILMARTH, MRS. HENRY D., West Boxford, Mass. (40).
Wilmore, John J., Professor of Mechanical Engineering, Ala. Polytechnic Institute, Auburn, Ala. (51). D

*Wilson, Charles Branch, Dept. of Biology, State Normal School, Westfield, Mass. (52). 1906. F

*Wilson, Delonza Tate, Assistant Professor of Mathematics and Astronomy, Case School of Applied Science, Cleveland, Ohio. (53). 1906. A

*Wilson, E. B., Columbia University, New York, N. Y. (49). 1900.

Wilson, Francis D., Prof. of Chemistry, Virginia Polythenic Inst., Blacksburg, Va. (57). C

Wilson, Fredk. Morse, M. D., 834 Myrtle Ave., Bridgeport, Conn. (51). K

Wilson, Guy West, Prof. of Biology, Upper Iowa Univ., Fayette, Iowa. (58). G

*Wilson, Henry Van Peters, Professor of Biology, University of North Carolina, Chapel Hill, N. C. (50). 1901. F

WILSON, J. HOWARD, Castine, Maine. (57). E H

*Wilson, John Gordon, Asst. Prof. of Anatomy, University of Chicago, Chicago, Ill. (58). 1908. F

Wilson, John C., Cosmus Club, Washington, D. C. (49). I

Wilson, Prof. Margaret B., 72 East 77th St., New York, N. Y. (57).

*Wilson, Norman Richard, Lecturer in Mathematics, Wesley College, Winnipeg, Manitoba, Canada. (55). 1907. A

*Wilson, Robert N., Macleod, Alberta, Canada. (42). 1895. H

*Wilson, Dr. William Powell, Director Philadelphia Museums, 34th and South Sts., Philadelphia, Pa. (38). 1889. G

Willson, Prof. Frederick N., Princeton, N. J. (33). 1887. A D

Willson, Mortimer, M. D., Cor. 6th & Water Sts., Port Huron, Mich. (50). A F

*Willson, Robert W., 64 Brattle St., Cambridge, Mass. (30). 1890. A B

Wimpfheimer, Chas. A., 131–137 Spring St., New York, N. Y. (57).

*Winchell, Alexander Newton, Professor of Geology and Mineralogy, Montana State School of Mines, Butte, Mont. (50). 1903. E

*Winchell, Horace V., Room 220, Great Northern Railway Bldg., St. Paul, Minn. (34). 1890. C E

*Winchell, Prof. N. H., 113 State St., Minneapolis, Minn. (19). 1874. E H

Windesheim, Gustave, M. D., 255 Main St., Kenosha, Wis. (51). K

Windsor, Sarah Sweet, A. B., M. D., 10 Exeter St., Boston, Mass. (47). F H

Wing, Henry H., Professor of Animal Husbandry, Cornell University, Ithaca, N. Y. (56). F

*Winslow, Charles Edward Armory, Asst. Prof. of Biology, Mass. Inst. Tech., Boston, Mass. (51). 1903. F K

Winslow, Mrs. C. E. A., care of Miss M. D. Hale, Chestnut Hill Ave., Brookline, Mass. (52). F

Winston, Isaac, The Portner, Washington, D. C. (55). A

Winter, Mahlon A., Armory Bldg., 5th and L Sts. N. W., Washington, D. C. (52). D E I K

Winter, Samuel Guy, 612 N. East St., Bloomington, Ill. (58).

*Winterhalter, A. G., Commander, U. S. N., Naval Observatory, Washington, D. C. (37). 1893. A

Winton, Will McClain, 212 Twenty-fourth Ave., S., Nashville, Tenn. (58). E F

*Wissler, Clark, Ph.D., Am. Mus. Nat. Hist., 77th St. and 8th Ave., New York, N. Y. (54). 1906. H

*Withers, W. A., Professor of Chemistry, North Carolina College of Agriculture and Mechanic Arts, West Raleigh, N. C. (33). 1891. C

*Witmer, Lightner, Ph. D., Asst. of Prof. of Psychology, University of Pennsylvania, Philadelphia, Pa. (46). 1905. H

Witte, Max Ernest, M. D., Superintendent of Clarinda State Hospital, Clarinda, Iowa. (51). K

*Witthaus, Dr. R. A., 55 W. 33d St., New York, N. Y. (35). 1890.

Woelfel, Albert, M. D., Assistant in Physiology, University of Chicago, Chicago, Ill. (54). K

Woglum, R. S., Special Agent, U. S. Dept. Agriculture, 121 Temple St., Los Angeles, Cal. (54). F

*Wolcott, Edson Roy, care of The Rankin Chemical Reduction Co., Joliet, Ill. (54). 1907. B C

Wolf, Albert H., Room 720, 218 La Salle St., Chicago, Ill. (58).

Wolfe, Elmer Ellsworth, Ph. D., Principal of the Academy, Marietta College, Marietta, Ohio. (51). B C G

Wölfel, Paul L., 362 Green Lane, Roxborough, Philadelphia, Pa. (51). D

*Wolff, Frank A., Ph. D., Bureau of Standards, Washington, D. C. (47). 1900. B

Wolff, Henry Albert, M. D., 501 West 138th St., New York, N. Y. (57). K

*Wolff, Dr. John E., University Museum, Cambridge, Mass. (36). 1894. E

*Woll, Fritz Wilhelm, 424 Charter St., Madison, Wis. (42). 1897. C

Wolverton, Byron C., Engineer, N. Y. & Pa. Telephone and Telegraph Co., 321–323 Montgomery St., Syracuse, N. Y. (50). D

*Wood, Arthur J., State College, Pa. (51). 1905. D

Wood, Casey A., D. C. L., M. D., Pres., Amer. Acad. Med., 72 Madison St., Chicago, Ill. (56). F K

Wood, Mrs. Cynthia A., 117 W. 58th St., New York, N. Y. (43).

Wood, Miss Elvira, 36 Wellington St., Waltham, Mass. (47).

*Wood, Francis Carter, Prof. of Chemical Pathology, Columbia University, 201 West 55th St., New York, N. Y. (57). 1908. K

Wood, Henry A. Wise, 1 Madison Ave., New York, N. Y. (57).

Wood, James, Mount Kisco, New York, N. Y. (57).

*Wood, Stuart, 400 Chestnut St., Philadelphia, Pa. (51). 1906.

*Wood, Thomas D., M. D., Prof. of Physical Education, Teachers College, Columbia University, New York, N. Y. (51). 1902. K

Wood, Walter, 400 Chestnut St., Philadelphia, Pa. (33). F I.

*Woodbridge, Frederick J. E., Professor of Philosophy, Columbia University, New York, N. Y. (52). 1905. H

Woodbridge, S. Homer, Associate Professor of Heating and Ventilation, Massachusetts Institute of Technology, Boston, Mass. (56). D

*Woodbury, C. J. H., Amer. Telephone and Telegraph Co., 125 Milk St., Boston, Mass. (29). 1884. D

Woodbury, Frank, M. D., 218 South 16th St., Philadelphia, Pa. (52). K

Woodhull, Brig.-Gen. Alfred A., U. S. A., Retired, 46 Bayard Lane, Princeton, N. J. (51). K

*Woodhull, John Francis, Teachers College, West 120th St., New York, N. Y. (43). 1899.

Woodhull, Marianna, 540 West 122d St., New York, N. Y. (57).

Woodhull, Gen. Maxwell Van Zandt, U. S. A., 2033 G St. N. W., Washington, D. C. (52).

Woodman, Joseph Edmund, A. M., S. D., Professor of Geology and Mineralogy, Dalhousie University, Halifax, N. S. (56). E

Woodruff, Major Charles Edward, Surgeon, U. S. A., Fort Wadsworth, N. Y. (54). H I K

*Woodruff, Lorande Loss, Biological Laboratory, Yale Univ., New Haven, Conn. (52). 1908. F

*Woods, Albert F., U. S. Dept. Agric., Washington, D. C. (43). 1897. G

*Woods, Charles D., Professor of Agriculture, University of Maine, Orono, Maine. (50). 1901. G

*Woods, Frederick Adams, M. D., 1006 Beacon St., Brookline, Mass. (51). 1902. K

Woodward, Augustus J., M. D., Mt. Auburn, Cincinnati, Ohio. (57). E K

*Woodward, Prof. Calvin M., Washington University, St. Louis, Mo. (32). 1884. A D I

*Woodward, R. S., President, Carnegie Institution, Washington, D.C. (33) 1885. ABD

*Woodward, Samuel B., M. D., 58 Pearl St., Worcester, Mass. (51). 1906. K

Woodward, Sherman M., A. B., M. S., Office of Experiment Stations, Dept. Agriculture, Washington, D. C. (57). A

*Woodworth, C. W., Asst. Professor of Entomology, University of California, Berkeley, Cal. (50). 1906. F

Woodworth, George Kean, Councillor-at-Law, Geological Museum, Cambridge, Mass. (50). D

*Woodworth, Jay Backus, Assistant Professor of Geology, Harvard University, Cambridge, Mass. (54). 1906. E

*Woodworth, R. S., Ph. D., Columbia University, New York, N. Y. (49). 1901. HK

*Woodworth, William McMichael, Ph. D., 149 Brattle St., Cambridge, Mass. (44). 1898. F

Wollen, William Watson, 518 Am. Central Life Bldg., Indianapolis, Ind. (55). F

Wooley, Paul G., M. D., Chief Medical Inspector and Medical Advisor, His Siamese Majesty's Gov., Bangkok, Siam. (55). CK

Wooster, Lyman Child, Ph. D., Prof. Biology and Geology, State Normal School, Emporia, Kans. (54). EF

Wooton, Elmer O., Professor of Botany, New Mexico Agricultural College, Agricultural College, N. M. (56). G

*Worcester, Dean C., U. S. Philippine Commission, 16 Vagtajan, Manila, P. I. (46). 1903. FH

Worcester, Wilfred J., 342 Lexington Ave., New York, N.Y. (57).

Work, Wm. R., Carnegie Technical Schools, Pittsburg, Pa. (57). D

Worsham, Ernest Lee, Room 5, State Capitol, Atlanta, Ga. (58).

Wren, Christopher, Plymouth, Pa. (54). H

Wright, Albert Hazens, Teacher of Zoölogy, 325 Dryden Road, Ithaca, N. Y. (56). F

*Wright, Prof. Arthur W., Yale University, New Haven, Conn. (14). 1874. AB

*Wright, Carroll D., LL. D., President, Clark College, Worcester, Mass. (41). 1894. I

*Wright, Fred. Eugene, Ph. D., U. S. Geological Survey, Washington, D. C. (52). 1906. E

*Wright, Geo. Frederick, D. D., LL. D., F. G. S. A., Drawer C, Oberlin, Ohio. (29). 1882. EH

Wright, Henry Wilkes, Ph. D., Prof. of Philosophy, Lake Forest University, Lake Bluff, Ill. (58).

Wright, Jasper Heman, Mechanics Institute, Rochester, N. Y. (56). FG

Wright, Jonathan, M. D., 44 W. 49th St., New York, N. Y. (43). **K**

*Wright, Walter C., 45 Milk St.. Boston, Mass. (54). 1906. **A**

*Wright, Walter Livingston, Jr., Professor of Mathematics, Lincoln University, Pa. (50). 1906. **A**

*Wrinch, Frank Sidney, Ph. D., Instructor in Experimental Psychology, Univ. of California, Berkeley, Cal. (52). 1906. **H K**

Wulling, Frederick J., College of Pharmacy, University of Minnesota, Minneapolis, Minn. (58).

WUNDERLICH, FREDERICK W., M. D., 165 Remsen St., Brooklyn, N. Y. (45).

Würtele, John Hunter, 1807 Pacific Ave., Spokane, Wash. (48).

*Würtele, Rev. Louis C., Acton Vale, P. Q., Canada. (11). 1875. **E**

*Wurts, Alexander Jay, Prof. of Applied Electricity, Carnegie Technical Schools, Carnegie Institute, Pittsburg, Pa. (50). 1906. **D**

Wyant, Alex. L., 141 West 85th St., New York, N. Y. (57).

Wyatt, Francis, 20 Fifth Ave., New York, N. Y. (57). **C**

*Wylie, Robert Bradford, Asst. Prof. of Botany, State University of Iowa, Iowa City, Iowa. (53). 1905. **G**

*Wyman, Walter, M. D., Surgeon-General, Public Health and Marine Hospital Service, Washington, D. C. (51). 1903. **K**

Yamanouchi, Shigeo, Hull Botanical Laboratory, Univ. of Chicago, Chicago, Ill. (57). **G**

*Yanney, Benjamin F., Prof. Mathematics and Astronomy, Mt. Union College, Alliance, Ohio. (51). 1906. **A**

*Yarrow, Dr. H. C., 814 17th St. N.W., Washington, D. C. (23). 1874.

Yates, J. A., State Manual Training School, Pittsburg, Kans. (50). **B C G**

Yates, Lorenzo Gordin, Ph. D., President, Soc. Nat. History, Santa Barbara, Cal. (54). **E F G H**

Yatsu, Naohidé, Zoological Institute, Imperial University, Tokyo, Japan. (56). **F**

*Yerkes, Robert Mearns, Instructor in Comparative Psychology, Harvard University, Cambridge, Mass. (52). 1905. **K**

Yothers, W. W., Orlando, Fla. (55). **F**

Youmans, Vincent J., 175 Elm Place, Mt. Vernon, New York. (43).

Young, Miss Anne Sewell, Mt. Holyoke College, So. Hadley, Mass. (54). **A**

*Young, A. V. E., Northwestern University, Evanston, Ill. (33). 1886. **B C**

Young, Geo. Albert, 163 Laurier Ave. West, Ottawa, Ontario, Canada. (57). **E**

Young, Hugh Hampton, M. D., 1005 N. Charles St., Baltimore, Md. (53). **K**

*Young, Stewart Woodford, Asst. Professor of Chemistry, Stanford University, Cal. (50). 1901. C

Young, Walter Douglas, E. E., B. & O. R.R. Co., 309 Oakdale Road, Roland Park, Baltimore, Md. (51). D

Zahm, George, Assistant Professor of Law, Yale University, New Haven, Conn. (53). I

*Zalinski, E. L., U.S.A., 201 East 16th St., New York, N. Y. (36). 1891. D

Zeit, P. Robert, M. D., Head of Dept. of Pathology and Bacteriology, Northwestern University Medical School, 4016 Vincennes Ave., Chicago, Ill. (58). K

*Zeleny, Anthony, Assistant Professor of Physics, University of Minnesota, Minneapolis, Minn. (56). 1908. B

*Zeleny, Charles, Indiana University, Bloomington, Ind. (53). 1905. F

*Zeleny, John, Associate Professor of Physics, University of Minnesota, Minneapolis, Minn. (50). 1901. B

*Ziwet, Alexander, 644 S. Ingalls St., Ann Arbor, Mich. (38). 1890. A

Zuber, Wm. H., Jeanette, Pa. (52). BC

INCORPORATED SCIENTIFIC BODIES.

[Holding membership under the provisions of Article 3 of the Constitution.]

Arizona, The University of, Library, Tucson, Arizona. (54).
California, The University of, Library, Berkeley, Cal. (52).
Chicago Theological Seminary Library, Miss Florence M. Freeman, Acting Librarian, 43 Warren Ave., Chicago, Ill. (58).
Cincinnati, Public Library of, Cincinnati, Ohio. (53).
Earlham College Science Club, Earlham College, Richmond, Ind. (54).
Evanston Academy of Northwestern Univ., Evanston, Ill. (58).
Georgetown University, Washington, D. C. (52).
Howard Memorial Library, New Orleans, La. (54).
Iowa State University Library, Iowa City, Iowa. (54).
Jersey City Free Public Library, Jersey City, N. J. (52).
Manchester Institute of Arts and Sciences, Manchester, N. H. (48).
Marietta College Library, Marietta, Ohio. (51).
Michigan State Normal College, Ypsilanti, Michigan. (53).
Mt. Carmel Scientific Society, Mt. Carmel, Ill. (50).
Mt. Holyoke College, Library of, South Hadley, Mass. (58).
Nebraska, The University of, Library, Lincoln, Neb. (51).
Ohio State University Library, Columbus, Ohio. (54).
Philadelphia, The Free Library of, 1217–1221 Chestnut St., Philadelphia, Pa. (51).
P. M. Musser Public Library, Muscatine, Iowa. (51).
Pratt Institute Free Library, Ryerson St., Brooklyn, N. Y. (52).
St. Francis Xavier's College, 30 W. 16th St., New York, N. Y. (52).
St. Olaf Library, Northfield, Minn. (52).
Western Illinois State Normal School, Macomb, Ill. (55).
Wilmington Institute Free Library, Wilmington, Del. (52).

SUMMARY:

Corrected to June 1, 1908.

Surviving Founders, 2; Patrons, 4; Honorary Fellows, 2; Fellows, 1,964; Members, 3,164; Total, 5,136.

NOTE.—The omission of an address in the foregoing list indicates that letters mailed to that last printed were returned as uncalled for. Information of the present address of the members indicated is requested by the PERMANENT SECRETARY.

DECEASED MEMBERS.

(A list of deceased members of the Association, so far as known at the time of publishing the volume of Proceedings of the Springfield meeting, May, 1906, is given in that volume. At the Buffalo meeting, the Council directed the Permanent Secretary to omit the printing of the full list of deceased members in the annual volumes and to print only the additions to the list. Since the publication of the list printed in the Ithaca and New York City Proceedings (Vol. 56–57), notices have been received of the decease of the following members.)

Allen, Richard H., Chatham, N. J. (49). Died January 14, 1908.

Ammons, Miss Theodosia G., State Agric. College, Fort Collins, Colo. (50). Died July 17, 1907.

Anthony, Prof. Wm. A., Cooper Union, New York, N. Y. Died May 29, 1908.

Austen, Prof. Peter T., 204 West 86th St., New York, N. Y. (44). Died December 30, 1907.

Bernays, Augustus Charles, M. D., 3623 Laclede Ave., St. Louis, Mo. (50). Died May 22, 1907.

Blair, Mrs. Eliza N., 1410 20th Street, Washington, D. C. (40). Died January, 1907.

Brodhead, Mark, 1733 19th Street, Washington, D. C. (52). Died August 4, 1906.

Cobey, W. W., U. S. Dept. Agric., Washington, D. C. (54). Died March 14, 1908.

Fort, I. A., North Platte, Neb. (51). (Notified May 2, 1908.)

Gardiner, Edward G., Ph. D., 131 Mt. Vernon St., Boston, Mass. (51). Died November 11, 1907.

Garland, Joseph E., M. D., 17 Pleasant St., Gloucester, Mass. (51). Died December 16, 1907.

Glenn, William, 1348 Block St., Baltimore, Md. (33). Died February 14, 1907.

Goddard, Clark I., D. D. S., Berkeley, Cal. (54).

Griffin, Eugene, 44 Broad Street, New York, N. Y. (50). Died April 11, 1907.

Hall, Professor Asaph, Norfolk, Conn. (25). Died November 22, 1907.

Hastings, John Walter, Cambridge, Mass. (54). Died April 26, 1908.

Heineman, Henry Newton, 409 West 59th St., New York, N. Y. (57). Died January, 1908.

Heuel, Frank, 117 West 79th St., New York, N. Y. (57). Died October 29, 1907.

Hitz, John, 1601 35th St., Washington, D. C. (52). Died March 23, 1908.

Holton, Nina Gates, U. S. Dept. Agric., Washington, D. C. (57). Died May 5, 1908.

Jesup, Morris K., 44 Pine St., New York, N. Y. (29). Died January 22, 1908.

Johnson, Willis Grant, 439 Lafayette Place, New York, N. Y. (47). Died March 11, 1908.

Kellerman, William A., Ph. D., Ohio State University, Columbus, Ohio. (41). Died March 8, 1908.

Kuhne, F. W., 723 Court St., Fort Wayne, Ind. (53). Died April 18, 1908.

Little, Henry P., Momence, Illinois. (50). Died September, 1903.

Parkhurst, Henry M., 173 Gates Ave., Brooklyn, N. Y. (23). Died January 21, 1908.

Pinchot, J. W., 1615 R. I. Avenue, Washington, D. C. (50). Died February 7, 1908.

Powell, James, 5252 Spring Grove Avenue, Cincinnati, Ohio. (51). Died February 25, 1908.

Rees, Professor John K., Columbia University, New York, N. Y. (26). Died 1907.

Stearns, Herman D., Monrovia, California. (53).

Sweat, Mrs. L. D. M., The Connecticut, Washington, D. C. (52). Died 1908.

Thompson, Millett Taylor, Ph. D., Clark University, Worcester, Mass. (51). Died August 7, 1907.

Thomson, William, M. D., 1426 Walnut St., Phila., Pa. (33). Died August 3, 1907.

Traylor, Miss Mary Clark, 600 South Grant Ave., Denver, Colo. (50).

Underwood, Lucien M., Columbia University, New York, N. Y. (33). Died 1907.

Walker, John A., Jersey City, N. J. (50). Died May 24, 1907.

Weed, Alfred, Tarrytown, N. Y. (51). Died January 12, 1907.

Yeates, William Smith, Atlanta, Georgia. (50). Died May 1, 1908.

Young, Charles A., 36 N. Main St., Hanover, New Hamsphire. (18). Died January 4, 1908.

THE FIFTY-EIGHTH MEETING

CHICAGO, ILL.

DECEMBER 30, 1907, to JANUARY 4, 1908.

ADDRESS

BY

THE RETIRING PRESIDENT OF THE ASSOCIATION.

THE INTERDEPENDENCE OF MEDICINE AND OTHER SCIENCES OF NATURE.

WILLIAM HENRY WELCH, M. D.

Science, January 10, 1908, N. S., Vol. XXVII, No. 680, pp. 49–64.

SECTION A.

Mathematics and Astronomy.

OFFICERS OF SECTION A

Vice-President and Chairman of the Section.

E. O. LOVETT, Princeton.

Secretary.

GEORGE A. MILLER, Urbana.

Member of Council.

G. B. HALSTED, Colorado.

Sectional Committee.

EDWARD KASNER, Vice-President, 1907; E. O. LOVETT, Vice-President, 1908; G. A. MILLER, Secretary.
ORMOND STONE, 1 year; E. B. FROST, 2 years; E. O. LOVETT, 3 years; HARRIS HANCOCK, 4 years; E. W. BROWN, 5 years.

Member of General Committee.

F. R. MOULTON, Chicago.

ADDRESSES AND PAPERS PRESENTED.

Geometry and Mechanics.
Address by EDWARD KASNER, Columbia University, Vice-President and Chairman of Section A for 1907.
(Will appear in *Science*.)

Observations with the Bruce Spectrograph. (With lantern.)
EDWIN B. FROST, Yerkes Observatory.
Astrophysical Journal.

Comments on the Zeiss Stereocomparator and the Spectrocomparator Belonging to Yerkes Observatory. (With lantern.)
EDWIN B. FROST.
Director's Report, Yerkes Observatory.

Photographic Phenomena of Comet d 1907. (Daniel.) (With lantern.)
E. E. BARNARD, Yerkes Observatory.

On a Great Bed of Nebulosity in Sagittarius, Photographed with the Bruce Telescope of the Yerkes Observatory. (With lantern.)
E. E. BARNARD.
Astronomische Nachrichten.

Note on the Problem of Three Bodies.
E. O. LOVETT, Princeton University.
American Journal of Mathematics. (Baltimore.)

The Light Curve of Delta Cephei. (With lantern.)
JOEL STEBBINS, University of Illinois.
Astrophysical Journal, April, 1908.

An Application of the Selenium Cell to Astronomical Photometry. (With lantern.)

JOEL STEBBINS and F. C. BROWN.

Astrophysical Journal, December, 1907–March, 1908.

Observations and Explanation of the Phenomena Seen at the Disappearances of the Rings of Saturn. (With lantern.)

E. E. BARNARD, Yerkes Observatory.

Astrophysical Journal, Vol. XXVII, No. 1, January, 1908.

On the Twenty-foot Horizontal Solar Spectrograph of the Yerkes Observatory. (With lantern.)

EDWIN B. FROST and PHILIP FOX.

Director's Report, Yerkes Observatory.

A Graphic Method for the Determination of the Orbit of a Spectroscopic Binary.

KURT LAVES, The University of Chicago. (Introduced by Edwin B. Frost.)

New Tables for the Time of Sight Correction of the Earth's Orbital Motion.

KURT LAVES.

A Generalized Theory of Integral Equations.

W. D. CAIRNS, Oberlin College.

On the Theory of Order, Static and Nascent.

G. B. HALSTED, Greeley, Colo.

"On the Foundations and Technique of Arithmetic."

Singular Points in the Approximate Development of the Perturbative Function.

F. W. REED, University of Illinois.

On a Certain Class of Algebraic Translation-Surfaces.
JOHN EISLAND, University of West Virginia.
American Journal of Mathematics. (Baltimore.)

Matrices Not Belonging to Groups.
ARTHUR RANUM, Cornell University.

A Note on Interest on Reserve from Items Computed for the Uniform Report Blank.
C. H. BECKETT, Purdue University.
Bulletin of the American Mathematical Society, Vol. 14, No. 6.

On Asymptotic Isothermic Surfaces.
A. E. YOUNG, Purdue University.
Transactions of American Mathematical Society.

Some Questionable Terms and Definitions Used in Elementary Mathematics.
G. A. MILLER, University of Illinois.
School of Science and Mathematics, April, 1908.

The Photographic Determination of Star-Colors and Their Relation to Spectral Type. (With lantern.)
J. A. PARKHURST and F. C. JORDAN, Yerkes Observatory.
Astrophysical Journal, April, 1908.

On the Detection of the Eruptive Prominences on the Solar Disk. (With lantern.)
PHILIP FOX, Yerkes Observatory.
Astrophysical Journal, Vol. XXVII.

An Investigation of the 40-inch Objective at the Yerkes Observatory. (With diagram.)
PHILIP FOX.
Astrophysical Journal, Vol. XXVII, March, 1908.

The Function of a Color Filter and of Certain Plates in Astronomical Photography.

R. J. WALLACE, Yerkes Observatory. (Introduced by Edwin B. Frost.)

Astrophysical Journal, Vol. XXVII, March, 1908.

The Vertical Coelostat or "Tower" Telescope of the Mt. Wilson Solar Observatory.

G. E. HALE.

Preliminary Results of a Comparative Study of the Spectra of the Limb and the Center of the Sun.

G. E. HALE and W. S. ADAMS.

A Simple Method for Reducing Spectrograms.

FRANK SCHLESINGER.

On the Probability of the Near Approach of Two Stars and on Relative Problems in the Sidereal Universe.

F. R. MOULTON.

SECTION B.

PHYSICS.

OFFICERS OF SECTION B.

Vice-President and Chairman of the Section.

D. C. MILLER, Cleveland.

Secretary.

A. D. COLE, Poughkeepsie.

Member of Council.

E. F. NICHOLS.

Sectional Committee.

W. C. SABINE, Vice-President, 1907; D. C. MILLER, Vice-President, 1908; A. D. COLE, Secretary.

GORDON F. HULL, 1 year; F. E. NIPHER, 2 years; E. L. NICHOLS, 3 years; A. TROWBRIDGE, 4 years; E. B. ROSA, 5 years.

Member of General Committee.

H. S. CARHART.

ADDRESSES AND PAPERS PRESENTED.

Melody and the Origin of the Musical Scale.
Address by Prof. WALLACE C. SABINE, Harvard University, Vice-President and Chairman of Section B for 1907.
Science May 29, 1908, N. S., Vol. XXVII, No. 700, pp. 841–847.

The Discharge of Electricity from Pointed Conductors.
JOHN ZELENY, University of Minnesota.
The Physical Review.

Notes on Spark Potentials.
R. F. EARHART, Ohio State University.

The Influence of Humidity upon the Electrical Discharge from Points in Air.
JOHN ZELENY, University of Minnesota.
The Physical Review.

Radioactivity of a Smoke-laden Atmosphere.
S. J. ALLEN, University of Cincinnati.
The Physical Review.

On the Value of the Charges Carried by the Negative Ion of Ionized Gases.
R. A. MILLIKAN and L. BEGEMAN, The University of Chicago.
Physical Review, Vol. XXVI, p. 192.

The Distribution of Ionizing Energy about an X-ray Tube in Action.
W. R. HAM, The University of Chicago.

The Velocity of the Negative Ions Produced by the Ultra-violet Rays.
ALOIS F. KOVARIK, University of Minnesota.

Absorption Spectra of Roentgen Rays, Measured by a Radiometer.
J. M. ADAMS, Harvard University.
Physical Review, Feb., 1908.

A Mechanical Effect accompanying Magnetization.
O. W. RICHARDSON, Princeton University.

Ionization of Gases at High Pressures.
HENRY A. ERIKSON, University of Minnesota.
Abstract in Physical Review, Feb., 1908.

The Variation of Apparent Capacity of a Condenser with the Time of Discharge and the Variation of the Capacity with Frequency in Alternating Current Measurements.
BRUCE V. HILL, University of Kansas.
Physical Review.

An Examination of Certain Alternating-Current Circuits, including those Containing Distributed Capacity.
CARL KINSLEY, The University of Chicago.

The Capacity of Paper Condensers and Telephone Cables.
ANTHONY ZELENY and A. P. ANDREWS, University of Minnesota.
The Physical Review.

A Hydrogen Peroxide Cell.
H. T. BARNES and G. W. SHEARER, McGill University, Montreal.
Journal of Physical Chemistry, Feb. 29, 1908.

The Heat of Dilution of Aqueous Salt Solutions.
F. L. BISHOP.

Determination of the Fusion Points of Sodium Nitrate and Potassium Nitrate.
FLOYD R. WATSON, University of Illinois.
Physical Review, Vol. XXVI, p. 198, February, 1908.

A New Apparatus for Measuring Electrolytic Resistance.
ARTHUR W. SMITH, University of Michigan.
Abstract in *Science*, N. S. Vol. XXVII, No. 693, April 10, 1908.

Heat of Evaporation of Water.
A. W. SMITH, University of Michigan.
Monthly Weather Review, October, 1907.

A Galvanometer Scale or the Direct Reading of Temperatures with Thermo-electric Couples.
ANTHONY ZELENY, University of Minnesota.
Physical Review.

The Use of the Bunsen Ice Calorimeter for Accurate Heat Measurements.
H. T. BARNES and F. H. DAY, McGill University, Montreal.
Physical Review.

The Resistance Temperature Coefficient and the Coefficient of Expansion of Carbon.
G. W. STEWART, University of North Dakota.
Abstract in Physical Review.

The Temperature Coefficient of the Moving Coil Galvanometer.
A. ZELENY and O. HOVDA, University of Minnesota.
Physical Review.

The Effect of Tension on Thermal and Electrical Conductivity.
N. F. SMITH, Olivet College, Mich.
Abstract in February Physical Review.

Some Cases of Excessive Damping of Torsional Vibrations.
K. E. GUTHE, Iowa State University.
Physical Review, February, 1908.

A Relation of Mass to Energy.
DANIEL F. COMSTOCK, Ph. D.

Method of Determining the Modulus of Bending of a Flat Spring.
R. S. WOODWARD, Carnegie Institution, Washington.

An Investigation of the Optical Properties of Films of Magnetic Metals.
C. A. SKINNER and A. Q. TOOL, University of Nebraska.
Philosophical Magazine.

The Electric Double Refraction of Carbon Bisulphide.
CHARLES F. HAGENOW, Armour Institute, Chicago.

The Spectrum of Calcium.
JAMES P. BARNES, Bryn Mawr College.
Astrophysical Journal, March, 1908.

Upon the Magnetic Separation of the Spectral Lines of Barium, Yttrium, Zirconium, and Osmium.
B. E. MOORE, University of Nebraska.
Astrophysical Journal, and Physical Review.

On the Absorption of Short Electric Waves by Air at Different Pressures.
JAMES E. IVES and ROBERT E. CLYDE GOWDY, University of Cincinnati.
Physical Review, February, 1908.

The Magnetic Properties of Antimony.
ARTHUR L. FOLEY, Indiana University.

A Repetition of Wheatstone's Experiment of 1834.
FRANCIS E. NIPHER, Washington University, St. Louis.

The Susceptibility of Copper and Tin and Their Alloys.
O. C. CLIFFORD, The University of Chicago.
Physical Review.

A Satisfactory Form of High Resistance.
G. W. STEWART, University of North Dakota.
Physical Review.

Phonographic Record of the Doppler Effect.
CHAS. T. KNIPP, University of Illinois.
Physical Review, February, 1908.

How Does the Violinist Control the Loudness of his Tone?
HARVEY N. DAVIS, Harvard University.

A Wave Machine Showing Damped or Undamped Compound Waves.
ALBERT B. PORTER, Chicago.

Notes on Harmonic Analysis.
ALBERT B. PORTER, Chicago.

SECTION C.

CHEMISTRY.

OFFICERS OF SECTION C.

Vice-President and Chairman of the Section.
H. P. TALBOT, Boston.

Secretary.
CHAS. L. PARSONS, Durham, N. H.

Member of Council.
(————.)

Sectional Committee.
CLIFFORD RICHARDSON, Vice-President, 1907; H. P. TALBOT, Vice-President, 1908; CHAS. L. PARSONS, Secretary, 1904–1908.
L. KAHLENBERG, 1 year; G. B. FRANKFORTER, 2 years; WILLIAM McPHERSON, 3 years; W. J. GIES, 4 years; L. P. KINNICUTT, 5 years.

Member of General Committee.
(————.)

Press Secretary.
B. E. CURRY.

AMERICAN CHEMICAL SOCIETY.

President.
MARSTON T. BOGERT, New York.

Secretary.
CHARLES L. PARSONS, Durham, N. H.

Editor.
W. A. NOYES.

Treasurer.
A. P. HALLOCK.

Librarian.
E. G. LOVE.

ADDRESSES AND PAPERS PRESENTED.

GENERAL SESSION.

A Plea for the Broader Education of the Chemical Engineer.
Address by CLIFFORD RICHARDSON, Vice-President and Chairman of Section C for 1907.
Science, N. S., Vol. XXVII, No. 681, January 17, 1908, page 81.

The Application of Physical Chemistry to Organic Chemistry.
JULIUS STEIGLITZ.
Science.

The Hydronitrogens and Their Derivatives.
A. W. BROWNE.

Some Present-Day Problems of Biological Chemists.
R. H. CHITTENDEN.
Science, February 14, 1908.

The Passage of Substances into the Human System by Osmosis.
LOUIS KAHLENBERG.
Journal of Physical Chemistry.

American Chemical Societies.
M. T. BOGERT.
Journal, American Chemical Society, 30, 163–82.

The Non-Equivalence of the Four Valences of the Carbon Atom.
J. U. NEFF.
Journal, American Chemical Society, April, 1908.

The Chemical Education of the Chemical Engineer.
WM. H. ELLIS.
Science, June 5, 1908, pp. 882-885.

Chemistry in the Government Service.
W. D. BIGELOW.
Science, N. S., Vol. XXVII, No. 691, March 27, 1908, page 481.

The Interrelations of the Elements.
HERBERT N. MCCOY.

PHYSICAL CHEMISTRY SECTION.

HERBERT N. MCCOY, *Chairman.*

On the Refractive Indices of Absolute and of Aqueous Alcohol.
LAUNCELOT ANDREWS.

On the Refractive Indices of Ether-Alcohol Mixtures.
LAUNCELOT ANDREWS.

The Latent Heat of Vaporization of Methyl Silicate.
LOUIS KAHLENBERG and ROBERT KOENIG.
Journal of Physical Chemistry.

Equilibrium in the System Silver Nitrate and Pyridine.
LOUIS KAHLENBERG and ROBERT K. BREWER.
Journal of Physical Chemistry.

Note on the Solubility Product.
JULIUS STEIGLITZ.
Journal, American Chemical Society.

Two New Methods of Determining the Secondary Ionization Constants of Dibasic Acid.
HERBERT N. MCCOY.

The Preparation of Urano-uranic Oxide and a Standard of Radioactivity.
GEORGE C. ASHMAN and HERBERT N. MCCOY.

The Three Component System—CuO, SO_3, H_2O at 25 Degrees.
J. M. BELL and W. C. TABER.

The Action of Nitric and Citric Acid Solutions upon Ferric Hydroxide.
F. K. CAMERON and W. O. ROBINSON.

The Rate of Diffusion of Oxygen through Organic Liquids.
G. B. FRANKFORTER and G. W. WALKER.
Journal, American Chemical Society.

The Casting of Zinc.
W. D. BANCROFT. (Reported by title.)

Solution in a Dissolved Solid.
CHARLES L. PARSONS. (Reported by title.)
Journal of Physical Chemistry, December, 1907.

Reversed Electrolysis.
J. W. TURRENTINE. (Reported by title.)
Journal of Physical Chemistry.

Principles Involved in the Construction of College Laboratories
CHARLES BASKERVILLE. (Reported by title.)

The Heat of Ionization and the Reversible Potential of Nickel.
E. P. SCHOCH. (Reported by title.)

AGRICULTURAL, SANITARY AND FOOD CHEMISTRY SECTION.

W. D. BIGELOW, *Chairman.*

Determination of Sulphites in Food Products.
EDWARD GUDEMAN.
Abstract in *Science*, February 21, 1908, page 294.

Natural and Modified Starches; An Introduction to a Comparative Study of their Physical and Chemical Properties.
CHESTER B. DURYEA.

Note on the Dyer Method for the Determining of Plant Food in Soils.
FRANK T. SHUTT and A. T. CHARRON.
Journal, American Chemical Society, June, 1908.

A Recent Analysis of Water from Great Salt Lake.
W. C. EBAUGH and KENNETH WILLIAMS.
Abstract in *Science.*

The Precipitation Method for the Estimation of Oils in Flavoring Extracts and Pharmaceutical Preparations.
CHARLES D. HOWARD.

Effect of Lime and Gypsum on the Solubility of Potassium in Feldspars.
F. W. MORSE and B. E. CURRY.

A Study of the Changes Taking Place in the Muscle of Chickens when Preserved at Low Temperatures.
M. E. PENNINGTON and E. Q. ST. JOHN, Food Research Laboratory.

Methods of Soil Toxicology.
OSWALD SCHREINER and EDMUND C. SHOREY.

Nitrates as Soil Renovators.
OSWALD SCHREINER AND HOWARD S. REED.

The Proteids of Cotton.
H. C. WHITE.
Abstract in *Science*, February 21, 1908.

The Volatilization of Certain Mineral Elements in Ashing Plant Materials
W. W. SKINNER, U. S. Department of Agriculture.

The Occurrence of Copper in Oysters.
J. T. WILLARD.
Journal, American Chemical Society.

Influence of Fertilizers upon the Composition of Wheat.
HARRY SNYDER.
Journal, American Chemical Society.

The Detection of Formic Acid in Food Products.
A. G. WOODMAN and ALBERT L. BURWELL.

An Electrically Heated Polariscopic Tube.
B. H. SMITH.

The Effect of Temperature on the Respiration of Apples.
FRED. W. MORSE.
Journal, American Chemical Society.

Some Notes on Soil Acidity.
FRED. W. MORSE and B. E. CURRY.

The Relation between the Effects of Acid in Nutrient Solutions, and of Liming.
BURT L. HARTWELL and F. R. PEMBER.
Rhode Island Agricultural Experiment Station, Annual Report, 20 (1907) 299–357, 358–380.

The Partial Substitution of Potassium by Sodium as a Plant Food.
B. L. HARTWELL, H. J. WHEELER and F. R. PEMBER.

A Study of the Chemistry of the Chinese Edible Bird's Nest "Neossin."
E. V. MCCOLLUM.

The Importance of the Publication of a General Bulletin giving the Results of Food and Drug Work in the United States.
E. H. S. BAILEY and H. L. JACKSON.
American Food Journal, Vol. III, No. 1, p. 2.

Extracting Sugar from Dried Beet Cosettes.
HARRY MCCORMACK.

Analyses of Grains and their Comparative Value for Feeding Purposes.
JOSEPH S. CHAMBERLAIN. (Reported by title.)

Changes taking Place in Whiskey stored in Wood.
C. A. CRAMPTON and L. M. TOLMAN. (Reported by title.)
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Detection of Thickeners in Ice-cream.
G. E. PATRICK. (Reported by title.)
American Food Journal, Chicago, February 15, 1908.

INORGANIC CHEMISTRY SECTION.

A. W. BROWN, *Chairman.*

Rapid Electroanalysis without Rotating Electrodes.
FRANCIS C. FRARY.

A Gas Volumeter with Table of Calculated Values for Carbon Dioxide
S. W. PARR.

Atomic Weight of Chlorine.
WM. A. NOYES and H. C. P. WEBER.
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and Bulletin of the Bureau of Standards, Vol. 4, No. 3.

An Yttrium Group Separation Method.
BENTON DALES and H. D. YOUNG.

Sodium Peroxide in Certain Quantitative Processes.
S. W. PARR.
Journal, American Chemical Society, May, 1908.

The Decomposition of Ores and Metallurgical Products by Means of Sodium Peroxide and Certain Metallic Sulphides.
J. H. WALTON, Jr., and A. SCHOLZ.

The Occurrence of Neon in Natural Gas.
H. P. CADY and D. F. MCFARLAND.

A Discussion of Methods in use for Separations in the Group and a Description of a New Method of Separating these Earths by Use of their Succinates.
V. LENHER.
Journal, American Chemical Society, April, 1908.

Dilution of the Strong Acids and of Ammonium Hydroxide.
C. W. FOULK and H. E. SURFACE.
Journal, American Chemical Society.

The Character of the Compound formed by the Addition of Ammonia to Ethylphosphoplatina Chloride (second contribution).
CHARLES H. HERTY and R. O. E. DAVIS.
Journal, American Chemical Society.

The Influence of Temperature on the Electrolytic Precipitation of Copper from Nitric Acid.
JAMES R. WITHROW.

Action of Certain Oxidizing Agents upon Hydrazine Sulphate.
F. F. SHETERLY. (Reported by title.)

The Electrolytic Formation of Selenic Acid from Lead Selenate
F. C. MATHERS. (Reported by title.)

The Reaction Produced by Heat upon a Mixture of Ammonium Chloride and Potassium Bichromate.

G. B. FRANKFORTER, E. V. MANUEL and V. H. ROEHRICH. (Reported by title.)

Journal, American Chemical Society.

Action of Water on Galvanized Iron.

W. F. MONTFORD. (Reported by title.)

Journal, American Chemical Society.

The Preparation of Silicon Tetrachloride.

CHARLES R. SANGER. (Reported by title.)

The Preparation and Properties of Pyrosulphol Chloride and Chlorosulphonic Acid.

CHARLES R. SANGER. (Reported by title.)

Recent Improvements in the Determination of Small Amounts of Arsenic and Antimony.

CHARLES R. SANGER. (Reported by title.)

The Determination of Small Amounts of Fluorine.

CHARLES R. SANGER.

Sodium Alum.

W. R. SMITH. (Reported by title.)

Some New Compounds of Hydrazine.

J. W. TURRENTINE. (Reported by title.)

Fractionation of the Yttrium Earths.

R. D. HALL. (Reported by title.)

The Rare Earth Bromates—A New Method of Separation of the Yttrium Earths.
CHARLES JAMES. (Reported by title.)

A Scheme for the Separation of the Rare Earths.
CHARLES JAMES. (Reported by title.)

A Study of Graphitic Acid.
G. B. FRANKFORTER and LILLIAN COHEN. (Reported by title.)
Journal, American Chemical Society.

ORGANIC CHEMISTRY SECTION.

JULIUS STIEGLITZ, *Chairman.*

Stereoisomeric Chlorimido Esters.
W. S. HILPERT.

The Applications of Physical Chemistry to Organic Chemistry.
JULIUS STIEGLITZ.

The Condensation of Nitromalonic Aldehyde with Acetonyl Acetone.
W. J. HALE.
Science, N. S., XXVII, 322; also Journal, American Chemical Society.

The Conversion of Nitromethane into Fulminates.
LAUDER WILLIAM JONES.

The Asymmetric Methyl Dialkylisoureas.
RALPH H. MCKEE, Lake Forest University.
Journal, American Chemical Society.

Melting Points of Binary Mixtures of Ortho-Meta and Paranitranaline—A New Method for the Determination of these Compounds.
J. BISHOP TINGLE and H. F. ROLKER.
Journal, American Chemical Society.

Intramolecular Condensation in the Phthalanilic Acid Series.
J. BISHOP TINGLE and H. F. ROLKER.
Journal, American Chemical Society.

The Clarsen Reaction.
J. BISHOP TINGLE and ERNEST E. GORSLINE.
Journal, American Chemical Society.

Action of Amines on Ethyl Camphoroxalate.
J. BISHOP TINGLE and L. F. WILLIAMS.
Journal, American Chemical Society.

Studies in Catalysis—The Formation of Guanidines.
JULIUS STIEGLITZ.
Journal, American Chemical Society.

The Oxidation of M-Nitrobenzoylcarbinol.
WM. L. EVANS and BENJ. T. BROOKS.
Journal, American Chemical Society, Vol. 30, page 404.

A Chemical Study of a Number of the Wild Fruits from Sylvan Beach, N. Y.
NICHOLAS KNIGHT.

Bromination of Phenyl and Tolyl Ethers.
ALFRED N. COOK.

Mesoxalic Esters and their Reaction with Hydrazin.
RICHARD S. CURTISS and P. T. TARNOWSKI.
Journal, American Chemical Society, 1908.

Nitrosomalonic Esters.
RICHARD S. CURTISS.
Journal, American Chemical Society, 1908.

A Peculiar Decomposition of the Esters of Formylchloridoxime.
H. C. BIDDLE.

The Constitution of Indigos and Related Compounds.
M. T. BOGERT, K. G. FOLK and J. M. NELSON.
Journal, American Chemical Society, 30, 143.

Phenylmalonic Nitrile.
JOHN C. HESSLER.

The Catalysis of Imido Esters by Alkalies.
HERMAN I. SCHLESINGER.

The Action of the Alkalies on the Carbohydrates.
J. U. NEFF. (Reported by title.)
Liebig's Annalen der Chemic, Vol. 357, pages 294–312.

Marrubiin.
H. M. GORDIN.
Journal American Chemical Society, Vol. xxx, No. 2, February, 1908.

Imido-hydrantoine.
JAMES B. GARNER. (Reported by title.)
Journal, American Chemical Society.

On the Salts of Tautomeric Compounds.
S. F. ACREE, R. F. BRUNEL, J. M. JOHNSON, G. H. SHADINGER and SIDNEY NIRDLINGER. (Reported by title.)

The Hydrocarbons in the Lignites of the Northwest.
G. B. FRANKFORTER. (Reported by title.)
Journal, American Chemical Society.

Some Halides of Pinene.
G. B. FRANKFORTER and WALTER BADGER. (Reported by title.)

INDUSTRIAL CHEMISTRY SECTION.

W. H. ELLIS, *Chairman.*

The Use of Carbon Tetrachloride as an Extractive in Commercial Analyses of Cotton-seed Meal.
CHARLES H. HERTY and F. B. STEM.
Journal, American Chemical Society.

The Volatile Oils of Pinus taeda and of Pinus echinata.
CHARLES H. HERTY and W. S. DICKSON.
Journal, American Chemical Society.

A New Oxidizing Medium and its Function in the Blood and Muscle Elements.
J. E. SIEBEL.

Wood Turpentines and their Relation to Gum Turpentines.
W. C. GEER. (Reported by title.)

The Deposition of Arsenic upon the Vegetation of Smelter Regions.
W. D. HARKINS. (Reported by title.)

Determination of Small Quantities of Monocarbonate in Bicarbonate of Soda.
J. D. PENNOCK and D. A. MORTON.

The Criteria of Deterioration in Flesh Foods.
W. D. RICHARDSON. (Reported by title.)
Journal, American Chemical Society, 1908.

Transparent Soap: A Supercooled Solution.
W. D. RICHARDSON. (Reported by title.)
Journal, American Chemical Society, March, 1908.

Examination of Crude Petroleum for Comparative Purposes.
DAVID T. DAY. (Reported by title.)

Long-leaf Pine Oil.
J. E. TEEPLE. (Reported by title.)
Journal, American Chemical Society, Vol. xxx, No. 3, p. 412.

Microscopic Detection of Free Magnesia in Portland Cement.
ALFRED H. WHITE. (Reported by title.)

Analysis of Turpentine by Fractional Distillation with Steam.
W. C. GEER. (Reported by title.)

BIOLOGICAL CHEMISTRY SECTION IN JOINT SESSION WITH AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS.

R. H. CHITTENDEN, *Chairman and President.*

Organic Soil Constituents.
OSWALD SCHREINER and EDMUND C. SHOREY.

Toxic Substances Arising During Plant Metabolism.
OSWALD SCHREINER and M. X. SULLIVAN.

The Chemical and the Physiological Properties of a Solution of Hydrochloric Acid and Sodium Chloride.
AMOS W. PETERS.

The Endo- and Ekto-invertase of the Date.
A. E. VINSON.

On the Occurrence of a Phytin-splitting Enzyme in Animal Tissues.
E. V. MCCULLOM and E. B. HART, Chemical Laboratory of the Wisconsin Experiment Station.

Bacterial Growth and Chemical Changes in Milk kept at Low Temperatures.
M. E. PENNINGTON, U. S. Department of Agriculture, Bureau of Chemistry.
Journal of Biological Chemistry, probably the April number, 1908.

A Demonstration of a Method (with apparatus) of showing the Electric Charge of Colloids.
A. B. MCCALLUM. (Reported by title.)

On the Action of Nitric Acid on Nucleic Acids.
WALTER JONES. (Reported by title.)

The Probability of a Radiotropic Response.
C. STUART GAGER. (Reported by title.)
Journal, Biological Chemistry, Vol. 4, March, 1908, and in Proceedings, Society Biological Chemists, No. 3, 1908.

Glycocoll as a Product of Uricolysis.
LYMAN B. STOOKEY. (Reported by title.)
Proceedings of the Society for Experimental Biology and Medicine.

A Study of the Influence of Potassium Cyanide on the Excretion of Nitrogenous Substances in the Urine of Dogs.
WILLIAM H. WALKER. (Reported by title.)

SECTION D.

Mechanical Science and Engineering.

OFFICERS OF SECTION D.

Vice-President and Chairman of the Section.

O. H. LANDRETH, Schenectady.

Secretary.

W. T. MAGRUDER, Columbus.

Member of Council.

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Sectional Committee.

W. R. WARNER, Vice-President, 1907; O. H. LANDRETH, Vice-President, 1908; WM. T. MAGRUDER, Secretary, 1904–8
H. T. EDDY, 1 year; WILLIAM KENT, 2 years; A. M. GREENE, Jr., 3 years; J. B. WEBB, 4 years; J. E. BOYD, 5 years.

Member of General Committee.

(————.)

[There was no vice-presidential address before this section.]

PAPERS READ.

Experiments with Tar and Oil on the Highways of Rhode Island.

ARTHUR H. BLANCHARD, Associate Professor of Civil Engineering, Brown University, Providence, R. I.

A Pressure-Temperature Diagram of the Properties of Superheated Steam.

HENRY T. EDDY, Professor of Mathematics and Mechanics, College of Engineering, University of Minnesota, Minneapolis, Minn.

The Use of Arrow-Heads in Alternating Current Vector Diagrams.

A. S. LANGSDORF, Professor of Electrical Engineering, Washington University, St. Louis, Mo.

Military Aeronautics.

GEORGE O. SQUIER, Major, Signal Corps, U. S. Army, Ft. Leavenworth, Kans.

On the Mechanical and Other Appliances of the Compound Air-Tanks Equipped at Cerro de Pasco, Peru, at 14,000 feet Elevation, for the Relief and Prevention of Mountain Sickness.

DAVID TODD, Director of the Amherst College Observatory, Amherst, Mass.

An Instrument for Investigating the Circulation in Water-Tube Boilers.

FRANK C. WAGNER, Rose Polytechnic Institute, Terre Haute, Ind.

Drainage as Related to Mosquito Extermination.

HENRY CLAY WEEKS, Bayside, Long Island, N. Y.

A Note on the Shearing Stresses in Beams.

CALVIN M. WOODWARD, Professor of Mathematics and Applied Mechanics, Washington University, St. Louis, Mo.

The Problem of Power for Airships.

CALVIN M. WOODWARD, Professor of Mathematics and Applied Mechanics, Washington University, St. Louis, Mo.

Segregation in Steel Ingots.

HENRY M. HOWE, Professor of Metallurgy, Columbia University, New York, N. Y.

JOINT SESSION WITH SECTION A, MATHEMATICS AND ASTRONOMY, AND WITH THE CHICAGO SECTION OF THE AMERICAN MATHEMATICAL SOCIETY.

Engineering-Mathematics Symposium.

The Present Status of the Teaching of Mathematics to Engineering Students.

(*a*) In this Country—Professor EDGAR J. TOWNSEND, University of Illinois, Champaign, Ill.

(*b*) In Foreign Countries—Professor ALEXANDER ZIWET, University of Michigan, Ann Arbor, Mich.

Address by President ROBERT S. WOODWARD, Carnegie Institution, Washington, D. C.

Address by Mr. CHARLES F. SCOTT, Westinghouse Electric and Manufacturing Co., Pittsburg, Pa.

What is Needed in the Teaching of Mathematics to Students of Engineering?

(*a*) Range of Subjects.

(*b*) Extent in the Various Subjects.

(*c*) Methods of Presentation.

(*d*) Chief Aims.

Discussed as follows:

From the Standpoint of the Practicing Engineer, by:

CHARLES P. STEINMETZ, Consulting Electrical Engineer, General Electric Company Schenectady, N. Y.

RALPH MODJESKI, Consulting Civil Engineer, Chicago, Ill.

W. L. ABBOTT, Chief Operating Engineer, Chicago Edison Company, Chicago, Ill.

J. A. L. WADDELL, Consulting Bridge Engineer, Kansas City, Mo.

From the Standpoint of the Professor of Engineering, by:

GARDNER S. WILLIAMS, Professor of Civil, Hydraulic, and Sanitary Engineering, University of Michigan, Ann Arbor, Mich.

ARTHUR N. TALBOT, Professor of Municipal and Sanitary Engineering, University of Illinois, Urbana, Ill.

From the Standpoint of the Professor of Mathematics in the Engineering College, by:

CHARLES S. SLICHTER, Professor of Applied Mathematics, University of Wisconsin, Madison, Wis.

FREDERICK S. WOODS, Professor of Mathematics, Massachusetts Institute of Technology, Boston, Mass.

FRED W. MCNAIR, President, Michigan College of Mines, Houghton, Mich.

SECTION E.

Geology and Geography.

OFFICERS OF SECTION E.

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J. P. IDDINGS, Chicago.

Secretary.

F. P. GULLIVER, Norwich.

Member of Council.

WM. H. HOBBS, Madison.

Sectional Committee.

A. C. LANE, Vice-President, 1907; J. P. IDDINGS, Vice-President, 1908; F. P. GULLIVER, Secretary, 1908.
C. R. VAN HISE, 1 year; I. C. WHITE, 2 years; F. P. GULLIVER, 3 years; E. H. BARBOUR, 4 years; J. B. WOODWORTH, 5 years.

Member of General Committee.

W. H. HOBBS.

ADDRESSES AND PAPERS READ.

The Early Surroundings of Life.

Address by A. C. LANE, Vice-President and Chairman of Section E.

Dr. Lane's address was read at the summer meeting of the Section and appears in *Science*, August 2, 1907, pp. 129–143.

[For detail of proceedings of above special summer meeting of Section E, see *Science*, September 27, 1907, N. S., Vol. XXVI, No. 665, pp. 397–404.]

The Red Sandstone Series of Southeastern Minnesota.

C. W. HALL.

Bulletin, Geological Society of America.

Preliminary Account of the Geology of the Highlands of New Jersey.

W. S. BAYLEY.

Petroleum Fields of Illinois in 1907.

H. FOSTER BAIN, Director of the Geological Survey, Urbana, Illinois.

General Petrology of Wisconsin Igneous Rocks.

S. WEIDMAN, Madison, Wis.

Geology and Mining Industry of Chihuahua, Mexico.

RUFUS M. BAGG, Jr., Urbana, Ill.

Niagaran and Oriskanian in the Western Part of Virginia.

E. B. BRANSON, Oberlin, Ohio. (Read by title.)

The Earthquake of 1872 in the Owens Valley, California.
WILLARD D. JOHNSON, Washington, and W. H. HOBBS, Ann Arbor, Mich. (Read by W. H. Hobbs.)

A Design for a Universal Seismograph with Duplex Recorders for Horizontal Motion.
C. F. MARVIN, U. S. Weather Bureau, Washington, D. C.

Report of Seismological Committee of the International Seismological Association.
H. F. REID, Baltimore, Maryland, Chairman. (Read by Dr. Otto Klotz, Ottawa, Canada.)

A Reconstruction of the Water Planes of the Extinct Glacial Great Lakes in the Lake Michigan Basin.
J. W. GOLDTHWAIT, Evanston, Ill.

Earth Movements in the Laurentian Basin Since its Occupation by the Ice.
WILLIAM HERBERT HOBBS, Ann Arbor, Mich.

A Review of the Great Lakes History, with Special Reference to the Deformation of the Ancient Water Planes.
FRANK B. TAYLOR, Fort Wayne, Ind.

Journal of Geology.

The Mississippian Section in Illinois.
STUART WELLER, Chicago, Ill.

Devonic Elements in the Late Siluric Fauna of Southern Michigan.
A. W. GRABAU, New York, and W. H. SHERZER, Ypsilanti, Mich. (Read by W. H. Sherzer.)

Notes on the Traverse Group of Michigan.
A. W. GRABAU, New York City. (Read by W. H. Sherzer, Ypsilanti, Mich.)

The Evolution and Distribution of the Pleisosaurs.
S. W. WILLISTON, Chicago, Ill.

On the Discovery of Vertebrate Fossils in the Pennsylvanian, near Pittsburg, Pa.
PERCY E. RAYMOND, Pittsburg, Pa.

On the Discovery of Pelycosaurian Remains in Rocks of Pennsylvanian Age near Pittsburg, Pa.
E. C. CASE, Ann Arbor, Mich. (Read by title.)

The Lignite of Mississippi.
CALVIN S. BROWN, University Postoffice, Mississippi.

The Influence of the Tides on the Earth's Rotation.
T. C. CHAMBERLIN, Chicago, Ill.
Publications of Carnegie Institution.

Glacial Erosion in Wales.
W. M. DAVIS, Cambridge, Mass.

Beginning and Recession of Saint Anthony's Falls.
F. W. SARDESON, Minneapolis, Minn.

Arched Structure in Lockport Limestone.
H. L. FAIRCHILD, Rochester, N. Y.

Correlation of Distribution of Copper and Diamonds in the Glacial Drift of the Great Lakes Region.
OLIVER C. FARRINGTON, Chicago, Ill.

The Alterations of Glacial Deposits by Later Ice-invasions.
FRANK CARNEY, Granville, Ohio.

A Demonstration of the Curvature of the Earth's Surface.
ROBERT M. BROWN, Worcester, Mass.
National Geog. Magazine, Vol. XVIII, December 17, 1907, under title of "A Simple Method of Proving that the Earth is Round."

Working Hypothesis on the Physiography of Alaska.
WALLACE W. ATWOOD, Chicago, Ill.

The Honeoye-Irondequoit Kame-Moraine.
CHARLES R. DRYER, Terre Haute, Ind.

Glacial Lake Bloomfield.
CHARLES R. DRYER, Terre Haute, Ind.

The Loesses of the Mississippi Valley.
B. SHIMEK, Iowa City, Iowa.

The Gases in Rocks.
R. T. CHAMBERLIN, Chicago, Ill. (Read by T. C. Chamberlin.)

Work of the United States Reclamation Service.
E. T. PERKINS, Chicago, Ill.

Fjords of Puget Sound and the Saguenay.
WARREN UPHAM, St. Paul, Minn.

SECTION F.

ZOOLOGY.

OFFICERS OF SECTION F.

Vice-President and Chairman of the Section.

E. B. WILSON, New York.

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Sectional Committee.

E. G. CONKLIN, Vice-President, 1907; E. B. WILSON, Vice-President, 1908; C. JUDSON HERRICK, Secretary, 1906–8.
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Member of General Committee.

G. E. COGHILL, Oregon.

ADDRESSES AND PAPERS PRESENTED.

The Mechanism of Heredity.
Address by EDWIN G. CONKLIN, University of Pennsylvania Vice-President and Chairman of Section F for 1907.
Science, January 17, 1908, N. S., Vol. XXVII, No. 681, pp. 89–99.

A Contribution Toward an Experimental Analysis of the Karyokinetic Figure.
FRANK R. LILLIE.

An Experimental Study of the Rate of Regeneration in *Cassiopea xamachana*.
C. R. STOCKARD.

The Variability of Zygospores in *Spirogyra quadrata* Petit, Formed by Scalariform and by Lateral Conjugation, and Its Bearing on the Theory of Amphimixis.
L. B. WALTON.

The Cause of Dominance in Heredity and Experimental Production of Variability in Dominance.
W. L. TOWER.

The Pacific Scientific Institution.
WM. A. BRYAN.

The Biochemical Action of Copper Sulphate on Aquatic Micro-organisms
A. W. PETERS.

The Mechanics of Orientation in Some of the Lower Organisms.
S. O. MAST.

Minimal Size in Form Regulation.
C. M. CHILD.

Galvanotropism of Bacteria.
J. F. ABBOTT.

Habits, Reactions, and Mating Instincts of the "Walking-Stick," *Aplopus mayeri.*
C. R. STOCKARD.

Some Reactions of the Pomace Fly (*Drosophila ampelophila*) to External Stimuli.
F. W. CARPENTER.

Behavior of Perichaeta and Lumbricus toward Stimuli of Various Intensities.
E. H. HARPER.

The Reaction of Amphibian Embryos to Tactile Stimuli.
G. E. COGHILL.

The Phylogenetic Differentiation of the Organs of Smell and Taste
C. JUDSON HERRICK.

The Mesencephalic Root of the Trigeminus in Reptiles and Mammals.
J. B. JOHNSTON.

Epibranchial Placodes of *Ameiurus melas* and *nebulosus*.
F. L. LANDACRE.

Pinkus' Nerve in Amia and Lepidosteus. (With demonstration.)
CHARLES BROOKOVER.

The Sensory Ridges of the Lateral Line and the Primitive Pores of *Polyodon spathula*.
H. F. NACHTRIEB.

Cranial Nerve Components in Amphiuma.
H. W. NORRIS.

The Participation of Medullated Fibers in the Innervation of the Olfactory Mucous Membrane of Fishes. (With demonstration.)
R. E. SHELDON.

The Ischio-coccygeal Plexus as a Pathway for Cutaneous Innervation in the Leopard Frog.
E. H. DUNN.

Degeneration in the Ganglion Cells of Cambarus
HANSFORD MACCURDY.

On the Specific Gravity of the Constituent Parts of the Egg of Chaetopterus and the Effect of Centrifuging on the Polarity of the Egg.
FRANK R. LILLIE.

The Ovogenesis of Hydra.
E. R. DOWNING.

Early Stages in the Development of the Thymus of the Pied-billed Grebe.
HENRY F. NACHTRIEB.

A Place Mode for the Sacrum and First Haemal Arch of Necturus.
FRANK SMITH.

Note on a Trematode Parasite in a Hen's Egg from Northern Minnesota.
W. S. NICKERSON.

The Habits and Structures of the Larva of *Culex perturbans*.
J. B. SMITH.

The Development of the Excretory System of Ganoid Fishes.
JOHN H. MCCLELLAN.

On Some Isopods of the Family Dajidae from the Northwest Pacific Ocean with Descriptions of a New Species and a New Genus.
HARRIET RICHARDSON.

A Comparison between the Implantation Stages in Dipodomys and Geomys.
THOS. G. LEE.

On the Ovary and Ova of the Cuban Cave Fishes.
HENRY H. LANE.

The Relation Between Habitat and Taxonomic Characters of Gryllus.
FRANK E. LUTZ.

The Ecological Succession of Birds.
CHAS. C. ADAMS.

A Statistical Study of the Midsummer Bird Life of Illinois.
S. A. FORBES.

Significant Changes in the Breeding Ranges of Certain Birds of the Ohio Valley and Lower Lake Region.
LYNDS JONES.

The Relation of Ecology to General Biological Problems.
A Symposium by H. C. COWLES, V. E. SHELFORD, C. C. ADAMS, The University of Chicago. (45 min.)

A Study of the Sex Rat o in Drosophila.
W. J. MOENKHAUS.

Inheritance of Comb Form in Poultry.
C. B. DAVENPORT.

Genetics in Swine Hybrids.
Q. I. and J. P. SIMPSON.

Inheritance of Crest and Color in Canaries. (Lantern.)
C. B. DAVENPORT.

A Litter of Short-tailed and Tail-less Puppies. (With demonstration.)
R. M. STRONG.

The Experimental Production of Germinal Variations, Methods, Precautions and Theory of Their Causation. (Lantern.)
W. L. TOWER.

Some Stages in the Embryology of Certain Degenerate Phoridae and the Supposedly Hermaphroditic Genus Termitoxenia. (Lantern.)
C. T. BRUES.

Report on Some Experiments in Transplanting Species of Leptinotarsa into New Habitats, with Remarks upon the Significance of the Mode. (Lantern.)
W. L. TOWER.

Suggestions for a Natural Classification of the Family Lymnaeidae. (Lantern.)
FRANK C. BAKER.

Pigmentation in the Feather Germs of a White Ring-dove Hybrid. (Lantern.)
R. M. STRONG.

The Sense of Smell in Birds. (Lantern.)
R. M. STRONG.

The Anatomy of a Typical Pennatulid. (Lantern.)
C. C. NUTTING.

On the Distribution of Certain Salmonidae in Wisconsin.
GEORGE WAGNER.

Leidya distorta (Leidy) Found on a New Host.
HARRIET RICHARDSON.

The Process of Heredity as Exhibited by the Development of Fundulus Hybrids.
H. H. NEWMAN.

An Important Period in the History of the Sex Cells of *Rana pipiens*.
BENNETT M. ALLEN.

The Rate of Growth of the Ovum in the Chick and the Probable Significance of White and Yellow Yolk in Vertebrate Ova.
OSCAR RIDDLE.

A Comparison of the Reactions of a Terranean and a Subterranean Species of Isopod.
A. M. BANTA.

Occurrence of the Cysticercus of *Tænia solium* in Sheep.
B. H. RANSOM.

The Chromosomes in the Gryllidae.
W. J. BAUMGARTNER.

Was the Hydroid or the Medusa the Original Form of Hydromedusae?
C. C. NUTTING.

Further Results of Heterotransplantations of Blood-Vessels.
C. C. GUTHRIE.

Muscle Attachment to the Body-Wall in the Nymphs of Anax. (With lantern.)
WM. A. RILEY.

The Skeletal Parts of the Sand-Dollar. (With lantern.)
EMILY RAY GREGORY.

Notes on *Diplosis sorghicola* Coq.
CARLETON R. BALL.

A Study of Colorado Entomostraca.
GIDEON S. DODDS.

Demonstrations.

1. The Ideal Dissecting Tray.
2. Early Stages of *Eurypauropus spinosus* Ryder.
3. Museum Cataloguing; Accession and Department Catalogue Cards.

L. B. WALTON.

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1. Early Stages in the Development of the Thymus of the Pied-billed Grebe. Reconstruction of One Stage.
2. The Sensory Ridges of the Lateral Line and the Primitive Pores of *Polyodon spathula*.

HENRY F. NACHTRIEB.

A Litter of Short-tailed and Tail-less Puppies.
R. M. STRONG.

Early Stages in the Development of Dipodomys and Other Rodents,
THOMAS G. LEE.

Karyokinetic Figures of Centrifuged Eggs.
F. R. LILLIE.

An Electric Thermo-regulator.
S. O. MAST.

Ganglion Cells on Pinkus' Nerve of Amia and Lepidosteus.
CHARLES BROOKOVER.

Medullated Nerve Fibers in the Olfactory Mucous Membrane of Fishes.
R. E. SHELDON.

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1. Demonstration Case to Illustrate the Evolution of the Lineata Group of the Genus Leptinotarsa, Showing Forms That Have Been Produced in Experiment and Sports Occurring in Nature.
2. Demonstration Case to Illustrate the Results Obtained in the Production of Sports Experimentally. Arranged to Show the Results Produced in the Stimulated Germ Cells and the Results from those not Stimulated in the Case of the Same Parent.
3. Demonstration Case to Show the Results Obtained in the Transplantation of Leptinotarsas from One Habitat into Another and the Proof that They are Different in the New Habitat as Demonstrated by the Behavior of the Modified and Unmodified Form When Crossed with a Third Species.
4. Demonstration Cases to Illustrate Results Obtained in the Study of Variability of Dominance in Crossing.

W. L. TOWER.

Abnormal Toad and Frog Larvae from Eggs Fertilized by Spermatozoa Exposed to the Roentgen Rays.
C. R. BARDEEN.

A Cheap Sharp Microtome Knife.
W. J. BAUMGARTNER.

SECTION G.

BOTANY.

OFFICERS OF SECTION G.

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Member of General Committee.

M. B. THOMAS, Indiana.

ADDRESSES AND PAPERS PRESENTED.

Heredity and Environic Forces.
Address by D. T. MacDougal, Vice-President and Chairman of Section G for 1907.
Science, January 24, 1908, N. S., Vol. xxvii, No. 682, pp. 121–128.

The Past Season's Experiments with Anthracnose-resistant Clover.
S. M. Bain and S. H. Essary. (Read by title.)
Bulletin, Tenn. Agric. Exp. Sta.

Some New Cases of Mendelian Inheritance.
George H. Shull.
Botanical Gazette, 45: 103–116 F, 1908.

The Prairie Grass Formation of Southeastern South Dakota.
Leroy H. Harvey.
Botanical Gazette

New or Noteworthy Peronosporales.
Guy W. Wilson.
Bulletin, Torrey Club.

Notes on Cleistogamy of Grasses.
Agnes Chase.
Botanical Gazette, 45: 135–136, February, 1908.

Mutations of *Rudbeckia hirta*.
W. J. Beal.

Plant Zones of the Mountain Lakes in Northern Colorado.
FRANCIS RAMALEY and W. W. ROBBINS,

Rock-ridge Vegetation of Northern Colorado.
FRANCIS RAMALEY and W. W. ROBBINS.
University of Colorado, Studies, Vol. v, pp. 111–117.

A Preliminary Account of Studies in the Variability of a Unit Character in Oenothera.
R. R. GATES.

Mine Fungi.
PERLEY SPAULDING. (Read by title.)
Bulletin, Bur. Plant Industry, Dept. of Agriculture.

The Loco Investigation.
C. DWIGHT MARSH.
Bulletin, Bur. Plant Industry, Dept. of Agriculture.

Crystal Formation in Cultures of Penicillium.
ARTHUR W. DOX. (Presented by Charles Thom.)

Embryo-sac Development and Embryology of *Symplocarpus foetidus.*
C. A. ROSENDAHL.
Minnesota Botanical Studies, Third Series, Part IV.

Regeneration in Root-tips of Vicia and Phaseolus.
C. H. SHATTUCK.

Notes on *Gymnosporangium macropus.*
F. D. HEALD.
Note in *Science* N. S., 26: 219–220, 1907.

The Bud-rot of Carnations.
F. D. HEALD.
Bulletin 103, Nebr. Agr. Exp. Station.

A Principle of Elementary Laboratory Teaching for Culture Students.
CHARLES H. SHAW.
Science.

The Influence of the Form of Carbon upon the Morphology of Penicillium Cultures.
CHARLES THOM.
Bulletin, U. S. Dept. Agriculture.

Plant Succession in Eastern Colorado.
H. L. SHANTZ.
As part of a Bulletin of the Bureau of Plant Industry.

The Influence of Wind upon the Distribution of Plants in Iowa and Adjoining Territory.
B. SHIMEK.

Some Apple Leaf-spot Fungi.
CARL P. HARTLEY.

On the Occurrence of Pith Spots in the Wood of the Soft Maple.
HERMANN VON SCHRENK. (Read by title.)

Observations on Change of Sex in *Carica papaya*.
M. J. IORNS. (Read by title.)
Science.

Studies in the Genus Gymnosporangium.
FRANK D. KERN.
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Vernal Aspect of the Chaparral Formation of California.
PEHR OLSSON-SEFFER. (Read by title.)
Botanical Gazette.

Periodicity in Spirogyra.
W. F. COPELAND.

Types of Some Rocky Mountain Willows.
CARLETON R. BALL. (Read by title.)

Dry Rot of Corn and its Causes.
JAMES T. BARRETT.
Illinois Experiment Station Bulletin.

The Relation of "Conjugation" and "Nuclear Migration" in the Rusts.
E. W. OLIVE.
Annals of Botany, 1908.

The Relationships of the Aecidium-cup Type of Rust.
E. W. OLIVE.

Are Canned Goods Sterile?
T. J. BURRILL.

SECTION H.

Anthropology and Psychology.

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ADDRESSES AND PAPERS PRESENTED.

The Anthropology of California.
Address by A. L. KROEBER, Vice-President and Chairman of Section H for 1907.
Science, February 21, 1908, N. S., Vol. XXVII, No. 686, pp. 281–290.

Anthropology as a Subject of University and College Instruction.
FRANZ BOAS.

Some Aspects of the American Shaman.
ROLAND B. DIXON.
Journal of American Folk Lore, Vol. XXI, page 12.

The Chimariko Language.
ROLAND B. DIXON.
Publications of the University of California.

On the Teaching of Anthropology to Large Classes.
ALFRED M. TOZZER.

A Note upon Star-Lore among the Navajos.
ALFRED M. TOZZER.

A Number-form from Folk-medicine.
CHARLES BUNDY WILSON.

Some Archeological Forgeries from Michigan.
FRANCIS W. KELSEY.

The Prehistoric Habitations of the Sioux.
N. H. WINCHELL.

Recent Aspects of the Eolithic Discussion.
CHARLES PEABODY.
American Anthropologist, N. S. 10, 1908, pp. 113–114.

Report for the Committee on American Archeological Nomenclature.
CHARLES PEABODY.
American Anthropologist N. S. 10, 1908, pp. 113–114.

Report for the Committee on the Preservation of American Antiquities.
E. L. HEWETT.

Report for the Committee on the Concordance of American Mythology.
FRANZ BOAS.

Advance Report on the Nomenclature of Indian Linguistic Families.
F. W. HODGE.

The Genealogical Method in Anthropology.
W. H. H. RIVERS, Cambridge, England.

Field Work of the Department of Anthropology, Field Museum of Natural History.
GEORGE A. DORSEY.

Race Statistics of the University of Minnesota.
ALBERT ERNEST JENKS.

Migrations as Shown by Archeology.
Rev. STEPHEN D. PEET.

Blow Guns of the Abbott Malaysian Collection in the U. S. National Museum.
WALTER HOUGH.
Proceedings U. S. National Museum.

Catchwords for Mythological Motives.
R. LOWRIE.

The Archeology of Esmeraldas.
M. H. SAVILLE.

Further Investigation of the Archeology of Manabi.
M. H. SAVILLE.

Recent Archeological Explorations in Western Canada.
HENRY MONTGOMERY.
The American Anthropologist, January, 1908.

The Ancient Mexican Sites near Juchipila, Teuchitlan, Zapotlan, Perote, and Joalliche.
ADELA BRETON.

A Description of Certain Ruins in an Unnamed Canyon in Southeastern Utah.
FREDERICK MONSEN.

The Ancient Culture Types of Asia.
BERTHOLD LAUFER.

The Cocoanut Palm as a Historical Problem.
BERTHOLD LAUFER.

Explorations of the Seip Mound.
WILLIAM C. MILLS.

Explorations of Jackson County Rock-shelters.
WILLIAM C. MILLS.
Ohio State Arch. and Hist. Society Quarterly.

The Haliotis, or Abalone Industry of the California Coast; Preservative Laws.
Mrs. M. BURTON WILLIAMSON.
Annual Publication Historical Society, S. California, Vol. VII, Part I.

The Mythology of the Nez Perce Indians.
H. J. SPINDEN.

Ethnology of the Koskokwin Valley.
GEORGE B. GORDON.

Linguistic Variation Among the Alaskan Eskimo.
GEORGE B. GORDON.

Anthropology Past and Present.
A. H. THOMPSON.

Physical Characters of the Eskimos of the Coast West of Cape Bathurst.
V. STEFANSSON.

Social Organization and Daily Life of the Mackenzie River Eskimos.
V. STEFANSSON.

The Treatment of Disease Among the Mackenzie River Eskimos.
V. STEFANSSON.

The Brain Weight of the Filippino.
MAXIMILIAN HERZOG.

Mind and Matter in Culture.
OTIS T. MASON.

A Unique Method for Preserving the Inscriptions in our Historic Burial Grounds.
SARAH NEWCOMB MERRICK.

Present-day Beliefs in Some Medical Superstitions.
SARAH NEWCOMB MERRICK.

SECTION I.

Social and Economic Science.

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Member of General Committee.

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ADDRESSES AND PAPERS PRESENTED.

The Influence of Friction in Economics.
Address by CHARLES A. CONANT, Vice-President and Chairman of Section I for 1907.
Science, January 17, 1908, N. S., Vol. XXVII, No. 681, pp. 99–104.

Symposium on Economic Theory in Current Practice.

Introductory Address: The Economic Functions of Speculation.
JOHN F. CROWELL, associate editor, *Wall Street Journal*, New York, and chairman of Section I, 1907–8, and vice-president.

Address of Welcome.
J. LAURENCE LAUGHLIN, The University of Chicago.

Government Ownership from the Standpoint of Political Morals.
FREDERIC C. HOWE, of Cleveland, Ohio.

Symposium on the Financial Crisis of 1907.

The Financial Crisis of 1907 and the Remedy.
CHARLES N. FOWLER, chairman of the Committee on Banking and Currency of the House of Representatives.

The Economic and Political Effects of Gold Depreciation.
BYRON HOLT, editor of *Moody's Magazine*, New York City.

Causes of the Financial Crisis of 1907.
THEODORE E. BURTON, member of Congress, Cleveland, Ohio.

Remedies for Certain Financial Conditions Now Present.
C. M. KEYS, editor *World's Work*, New York City.

Introductory Discussion: With reference to "The Probable Gold Supplies of the Next Decade."
GEORGE E. ROBERTS, formerly Director of the Mint.

Symposium on Federal Regulation of Public Health.

Introductory address.

WILLIAM H. WELCH, president of the American Association for the Advancement of Science.

Legislative Problems.

GEORGE L. SHIRAS, 3d, Washington, D. C.

Present Public Health Functions of the Federal Government.

CHARLES A. L. REED, president of the National Legislative Council of the American Medical Association.

Importance of Public Health Legislation.

F. F. WESBROOK, University of Minnesota.

Discussion.

IRVING FISHER, chairman of the Committee of One Hundred, with Reference to the Work and Plans of the Committee of One Hundred; EDWIN B. TUTEUR of the Chicago Physicians' Club; JOHN S. FULTON, for the Committee on a National Department of Health, appointed by the American Public Health Association; GEORGE SIMMONS, Editor of the *Journal* of the American Medical Association; CHAMPE S. ANDREWS, for the Public Health Defense-League; M. V. O'SHEA, University of Wisconsin; C. R. HENDERSON, The University of Chicago; Dr. CRAIG, for the Associated Fraternities of America.

SECTION K.

Physiology and Experimental Medicine.

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Member of General Committee.

H. T. RICKETTS, Chicago.

ADDRESSES AND PAPERS PRESENTED.

Tendencies in Pathology.
Address by SIMON FLEXNER, Vice-President and Chairman of Section K for 1907.
Science, January 24, 1908, N. S., Vol. XXVII, No. 682, pp. 121–128.

THE FOLLOWING TITLES INCLUDE THOSE OF A SYMPOSIUM ON "IMMUNITY" UNDER THE AUSPICES OF THE SECTION AND THOSE OF A JOINT SESSION OF SECTION K AND THE SOCIETY OF AMERICAN BACTERIOLOGISTS.

A Comparative Study of the Cilium as a Key to the Structure of Contractile Protoplasm.
C. F. HODGE and O. P. DELLINGER.

Daily Life of *Amoeba proteus*.
C. F. HODGE, D. GIBBS and O. P. DELLINGER.

The Reaction of Amoeba to Stimuli of Small Area.
J. F. MCCLENDON. (By invitation.)

The Effects of Prolonged Centrifugal Force on Paramoecium.
J. F. MCCLENDON. (By invitation.)

The Relation of Plasticity to Age in the Dancing Mouse.
R. M. YERKES.

The Bacterio-agglutinating Action of Lymph under Different Conditions of Lymph Formation.
B. BRANDE. (By invitation.)

The Relative Hemolytic Action of Serum and Lymph under Different Conditions of Lymph Formation.
T. HUGHES. (By invitation.)

The Effect of Stimulation of the Vagi upon the Onset and Development of Rigor Mortis of the Mammalian Heart.
S. J. MELTZER and D. R. JOSEPH.

The Osmotic Concentration of the Blood during Anesthesia.
A. B. LUCKHARDT. (By invitation.)

A Review of Anaphylaxis, with Especial Reference to Immunity.
M. J. ROSENAU and JOHN F. ANDERSON.
Journal of Infectious Diseases, Vol. 5, January 30, 1908, pp. 85–105.

Hypersusceptibility and Immunity.
VICTOR C. VAUGHAN.

The Hemolysins of Animal Toxins.
PRESTON KYES.

The Differentiation of Homologous Proteins by Serum Reactions.
S. P. BEEBE.

On Spirochetal Immunity.
FREDERICK G. NOVY and R. E. KNAPP.
Journal of Infectious Diseases.

Immunity in Rocky Mountain Spotted Fever.
H. T. RICKETTS and L. GOMEZ.

Artificial Immunity to Glucosides.
WILLIAM W. FORD.

Virulence of Pneumococci in Relation to Phagocytosis.
E. C. ROSENOW.

The Mechanism of Streptococcus Immunity.
GUSTAV F. RUEDIGER.

Immunity in Tuberculosis.
MAZYCK P. RAVENEL.

Chemical Aspects of Immunity.
H. GIDEON WELLS.
Archives of Internal Medicine, Vol. 1, No. 2, 1908.

Passive Diphtheritic Immunity in Rabbits.
H. M. GOODMAN.

The Changing Flora of Chronic Suppurations: Its Relation to Opsonotherapy.
A. P. OHLMACHER.

Blackhead: A Coccidial Disease of Turkeys.
P. B. HADLEY. (By invitation.)

The Cause of the So-called Germicidal Property of Milk.
M. J. ROSENAU and G. W. McCOY.

The Significance of Leucocytes and Streptococci in the Production of High-grade Milk.
MARY E. PENNINGTON.

A Note on the Occurrence of Leucocytes and Streptococci in Milk.
S. C. PRESCOTT.

SECTION L.

EDUCATION.

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Member of General Committee.

D. P. MACMILLAN, Chicago.

ADDRESSES AND PAPERS PRESENTED.

The Outlook of the Section for Education.
Address by ELMER ELLSWORTH BROWN, Vice-President and Chairman of Section L for 1907.
Science, April 3, 1908, N. S., Vol. XXVII, No. 692, pp. 521–525.

The Ethical Judgments of School Children.
H. A. AIKENS.

The Practice Curve as an Educational Method.
J. MCKEEN CATTELL.
The Archives of Psychology.

Practise Curves in Learning.
W. F. DEARBORN.

The Effect of Practice on the Range of Visual Attention.
GUY MONTROSE WHIPPLE.
Psychological Review.

A Method of Concentration in Teaching Medicine.
W. T. PORTER.

The Grading of Students.
MAX MEYER.
Science.

Scales of Measurements in Education.
E. L. THORNDYKE.

The Place and Content of a Course in Biology in the High School.
G. W. HUNTER.
School Science, March, 1908.

The Scientific Basis of High School Studies.
C. DEGARMO.
School Review.

The Pedagogy of the Danish People's High Schools.
J. A. BERGSTROM.

The Teaching of Spelling as a Scientific Problem.
HENRY SUZZALLO.

An Experiment in the Teaching of Homonyms.
H. C. PEARSON.
Abstract in *Science*.

Psychological Experts in Public School Systems: The Experience of Chicago.
D. P. MACMILLAN.

Objective Measurements in the Efficiency of School Systems.
J. D. BURKS.

Reasons for the Existence of Schools of Education in American Universities.
C. W. A. LUCKEY.
The University Journal, Lincoln, Neb., February, 1908, Vol. IV, No. 5, pp. 85–87.

EXECUTIVE PROCEEDINGS.

EXECUTIVE PROCEEDINGS.

Report of the General Secretary.

The opening session of the meeting at the University of Chicago was held Monday, December 30, in Leon Mandel Hall, at 10 A. M. It was called to order by retiring President William H. Welch, who introduced President E. L. Nichols, who presided. Addresses of welcome were made on behalf of the University by Dean George E. Vincent, representing President Judson, and on behalf of the city by Mr. George E. Adams, vice-chairman of the local committee. President Nichols replied briefly on behalf of the association. An interesting feature of the addresses was the graceful reference of the speakers to the recent conferring of both the Copley medal and the Nobel prize on Professor A. A. Michelson, of the University of Chicago.

The address of retiring President Welch was delivered in the same hall on Monday evening and was intently followed by a large audience. After it the members of the association were received by Mrs. H. P. Judson and Dean Vincent.

The number of members officially registered for the meeting is 725. Members of affiliated societies not members of the association registered to the number of 185. It is certain that many members of the association failed to register while comparatively few from the affiliated societies registered with the permanent secretary. No account was taken of visitors not members of any society. From data available at the close of the meeting, it is fair to assume that the number of persons attending was close to 2,000.

The societies meeting in affiliation were the American Society of Naturalists, the American Mathematical Society (Chicago Branch), the American Physical Society, the American Chemical Society, the American Physiological Society, the American Society of Biological Chemists, the American Society of Zoologists (Central Branch), the Association of American Anatomists, the Association of American Geographers, the Society of American Bacteriologists, the Entomological Society of America, the Botanical Society of America, the American Psychological Association, the Western Philosophical Association, the American Anthropological Association, the American Folk Lore Society and the Bibliographical Society of America. In practically all cases one or more joint sessions of the society were held with the corresponding section of the association. In some cases the joint meeting included more than one affiliated society, and in at least one case two of the sections.

At one of these joint sessions occurred a symposium on "Co-operation in Biological Research;" at another a symposium on "Immunity." The one occurring in Mandel Hall, on Thursday, was devoted to an important and significant symposium on public health.

On Monday afternoon and Tuesday, sections A and B, with the Chicago section of the American Mathematical Society, listened to a series of addresses and discussions on the teaching of mathematics to students in engineering colleges. The large attendance to hear these addresses and discussions, together with the lively and often spicy character of the latter, fully attests the widespread and deep interest in this subject, one of great importance to engineering education. A committee was appointed to make an investigation of actual bearing on the subject and to report its finding and recommendations to the Society for the Promotion of Engineering Education. This society took steps last summer to appoint a committee of somewhat wider scope, and it is presumed that the committee appointed at Chicago will work in conjunction with that of the professional society.

Among the discussions of general interest was the very vigorous one before Section I on "The Panic of 1907, and the Monetary System of the Nation."

The American Chemical Society, in affiliation with Section C, held a large and enthusiastic meeting. Including the general papers and addresses, and the programs of the different sections of the society, over 150 papers were presented before this body. On Tuesday, Wednesday and Thursday mornings, sessions of general interest were held.

An important action of the council of the Chemical Society was the organization of the industrial chemists into a Division of Industrial Chemistry and Chemical Engineering, and the undertaking of the publication of a special journal of industrial and engineering chemistry.

The number of resolutions touching matters of general import which were adopted at the Chicago meeting was larger than usual. Of prime interest in this connection is the following letter:

THE WHITE HOUSE,
WASHINGTON, *December* 31, 1907.

"MY DEAR SIR:

"I am sending you herewith copy of a letter which on November 11th I addressed to the Governors of each of the several states relative to a proper conservation of the natural resources of this country and inviting the Governors, with their experts, to meet in conference on this subject at the White House on May 13, 14 and 15 next.

"I enclose also a copy of a letter recently received from the Chairman of the National Advisory Board on Fuels and Structural Materials, in which he suggests that in bringing this matter before the people of the country I invite the co-operation of the National Engineering Societies and other national organizations for research and development.

"The suggestion is an excellent one; and I am led to believe that these organizations can render no more important service at this time than to develop among the people of this country a realization of the fact that these resources, upon which the future as well as the present welfare of the nation depends, are being exhausted rapidly, wastefully, and, in many cases, permanently.

"I invite the co-operation of the American Association for the Advancement of Science in properly bringing this matter before the people; and it gives me added pleasure to invite you, as the President of the Association, to take part in this conference at the White House during May 13, 14 and 15 next.

"Sincerely yours,

"THEODORE ROOSEVELT.

"*The President of the American Association for the Advancement of Science.*"

Resolutions in accordance with this request were adopted as follows:

Realizing the rapid rate at which important natural resources of the country are being exhausted and the wasteful methods employed in the mining and utilization of other important mineral resources:

Resolved, That the American Association for the Advancement of Science joins President Roosevelt in calling the attention of the people of this country to the need of wisely conserving these resources for the future, as well as the present, needs of the nation; and in doing this the association asks the co-operation of its affiliated societies and other similar organizations throughout the country.

The association also urges upon the federal and state governments the importance of providing for such investigations and the enactment of such legislation as may prove necessary in preventing all unnecessary waste in the utilization of the nation's resources.

Resolved, That copies of this resolution be sent by the secretary of the association to the President of the United States, President of the Senate, and to the Speaker of the House of Representatives in Washington; to the presidents and secretaries of the societies affiliated with the association, and of other similar organizations in the United States.

Resolved, That the president of the association appoint a committee of five on the conservation of resources, this committee to take such further action in carrying out this resolution as from time to time the conditions may demand."

Other resolutions of a public character which were adopted follow:

Resolved, That the American Association for the Advancement of Science reaffirms its resolution passed at the New York meeting, favoring the establishment by Congress of the Southern Appalachian and White Mountain Forest Reserves, and reappoints the same committee to present this matter to the Speaker of the House of Representatives and the Presi-

dent of the Senate in an endeavor to secure at this time at least a beginning of this important work.

Relative to the National Bureau of Education, the following resolution was presented from Section L and adopted:

Whereas, The National Bureau of Education has for forty years rendered a much-needed service to the educational interests of the country, and

Whereas, Owing to inadequate support its growth has for many years lagged far behind the general educational growth of the country at large and far behind the growth of the needs for such service as it can render, and

Whereas, It is undertaking to meet the new demands of educators by the publication of bulletins, by the reorganization of its library and bibliographical service, and by providing a national clearing house for all kinds of needed educational information; therefore, be it

Resolved, That the American Association for the Advancement of Science earnestly recommends to Congress the enactment of legislation in regard to the National Bureau of Education that will—

1. Foster and encourage its work and enable it to expand in such a manner as to render its services to American education increasingly effective and scientific.

2. Strengthen it by additions to its present staff of specialists.

3. Enable it to secure quarters adequate for its new work and in keeping with its dignity and usefulness.

4. Provide it with means to render more complete service as a distributing center for such information as is currently needed for the improvement of education in all its grades and enable it to include the collection and dissemination of information needed in the further development of professional and technological schools and the graduate departments of our universities.

5. Raise the salaries of the commissioner and staff of experts to such a point as will enable the bureau not only to secure men of the highest grade, but to retain them permanently in its service.

Relative to research in tropical medicine, the following resolution was adopted:

Whereas, There exists at the present time in Panama an extraordinary opportunity for research work in certain phases of tropical medicine, through the existence there of well-equipped hospitals and well-trained medical men under the supervision of an expert sanitarian, himself a member of the Isthmian Canal Commission, and

Whereas, The solution of problems connected with this subject is of the highest importance to the welfare of this and other countries, be it

Resolved, That it is the sense of the American Association for the Advancement of Science that Congress at its present session should appropriate funds for the purpose of establishing a research laboratory at the Isthmus which shall devote itself to the solution of existing problems in tropical disease.

Relative to public health there was adopted the following:

Whereas, The American Association for the Advancement of Science has appointed a Committee of One Hundred on National Health, and this committee is performing a work of great importance for the welfare of the nation, be it

Resolved, That all members of this association are urged to co-operate with the commitee in its efforts to conserve and improve the health of the people and especially in its plans to increase the efficiency of the national government in dealing with the problems of public health.

The following resolution was adopted on the recommendation of Section F:

Realizing that the work in the Panama Canal is changing biological conditions in Panama and that the completion of the canal will enable the fresh-water faunæ of the two slopes to mingle freely and that many marine animals will succeed in passing the completed canal, the American Association for the Advancement of Science urges upon the President and Congress to make provision for a biological survey of the Panama Canal zone.

Since the conditions will be permanently changed as soon as the canal is completed and the work can not be satisfactorily done after the completion of the canal, there is great urgency that provisions for the work be made at once.

Resolved, That the permanent secretary be instructed to send copies of this resolution to be President, the Vice-President, the Speaker of the House and the Secretary of the Smithsonian Institution.

(Signed) C. H. EIGENMANN,
C. C. NUTTING,
Committee.

On recommendation of Section F, the Association endorsed as its own the following resolution:

Resolved, That the American Society of Vertebrate Paleontologists will aid in any way practicable those measures legislative, international and local which will prevent the now imminent extermination of the great marine vertebrata, especially the cetaceans and manatees, seals, green and other turtles on the coast of the United States or in the high seas.

The secretary of the Committee on Seismology submitted the following resolutions which were adopted:

Whereas, The organized study of earthquakes lately undertaken in other countries is leading to a better understanding of their causes and to the discovery and adoption of means for mitigating their disastrous consequences, be it

Resolved, That, in the opinion of the American Association for the Advancement of Science, the government of the United States should at once make suitable provision for the installation and maintenance of seismographs in properly distributed stations, and,

Whereas, The United States Weather Bureau is the best equipped of the government bureaus for undertaking these studies, be it further

Resolved, That in the opinon of this association the necessary appropriations should be made to the Department of Agriculture for the United States Weather Bureau, and be it further

Resolved, That a copy of these resolutions be forwarded to the Committee on Agriculture of the United States House of Representatives.

At the suggestion of the Committee on Policy, as appears below, the following resolution was adopted:

Whereas, The late Major James Carroll, M. D., U. S. A., was the first to submit voluntarily to the bite of an infected *Stegomyia* and from the bite of this mosquito suffered a severe attack of yellow fever, the effects of which led to his ultimate death, and,

Whereas, This was the first experimentally-produced case of yellow fever leading to the present knowledge of this disease, which has practically enabled its complete control, therefore, be it

Resolved, That the American Association for the Advancement of Science now in session in Chicago, Ill., recommends to the Senate and to the House of Representatives of the United States of America the passage of a bill securing to Mrs. Jennie Carroll, widow of the late Major James Carroll, of the Yellow Fever Commission of the United States Army, a special pension for the support of herself and her seven children.

REPORTS OF COMMITTEES.

ON THE DARWIN MEMORIAL.

The Darwin Memorial Committee appointed at the New York meeting, reported as follows:

To the American Association for the Advancement of Science:

Charles Darwin was born February, 1809, and the "Origin of Species" appeared in November, 1859. In celebrating the semi-centennial of the latter we have the opportunity of celebrating the centennial of the former. Your committee consequently recommends:

1. This double celebration.
2. The date of the celebration to be during Convocation Week, 1908-9.
3. That the method of celebration be as follows:

(*a*) That a morning and afternoon of the meetings of the American Association for the Advancement of Science during Convocation Week, 1908-9, be devoted to a series of addresses on various aspects of the theory of evolution, and that these be given solely by persons actively engaged in research bearing on evolution.

(*b*) That a dinner be arranged on the evening of the same day, followed by addresses of a more general nature concerning Darwin and his work.

(*c*) That all addresses be published in a Darwin Anniversary volume, to appear during 1909, the anniversary year.

(*d*) That the committee have full power to arrange the program.

4. It is recommended that the committee be authorized to raise a fund to pay the expenses of Mr. Francis Darwin or other foreign speaker or speakers.

On the Investigation of Cave Fauna of North America.

The Committee on the Investigation of the Cave Fauna of North America presented through the recorder, Professor C. H. Eigenmann, a report which will be printed later.

On Seismology.

The Committee on Seismology, through its secretary, Professor Wm. H. Hobbs, reported as follows:

Your committee organized with Professor H. F. Reid, of Johns Hopkins University, as chairman, and Professor W. H. Hobbs, of the University of Michigan, as secretary. The following sub-committees were named:

1. A committee to determine the best form or forms of seismograph for the seismological stations to be established: Messrs. Reid, Marvin and Bauer.

2. A committee of three members with power to add to its number to report as to what action is deemed desirable in reference to recommendations concerning earthquake-proof construction: Messrs. Lawson, McGee and Campbell.

3. A committee on stations. This committee is working in co-operation with the Weather Bureau, looking toward the establishment of seismographs in the stations of the Weather Bureau.

On Bibliography of Science.

The Committee on Bibliography of Science submitted the following report:

The committee appointed a year ago has secured from Dr. Haviland Field full details in regard to the work of the Concilium Bibliographicum and from Dr. Cyrus Adler a series of documents bearing on the work of the International Catalogue of Scientific Literature. There is some duplication in the work of the two institutions, but we are of the opinion that the Concilium Bibliographicum should be supported. Apart from the Swiss state and municipal subventions, the only appropriation in 1906 for its work was that of the American Association for the Advancemennt of Science. It is somewhat doubtful whether the research fund of the association should be used for bibliographical purposes; but we are inclined to recommend the continuation of this grant if there are no more urgent demands on the fund.

The members of the committee live so far apart that meetings could not be arranged during the year. We are of the opinion that an active committee on the bibliography of science could render an important service to

the association and for the advancement of science, but the members of the present committee fear that it will be impossible for them to undertake this work. We therefore recommend a new standing committee on the bibliography of science.

(Signed) R. S. WOODWARD.
C. B. DAVENPORT.
JAS. LEWIS HOWE.
J. McK. CATTELL.

ON POLICY.

The Committee on Policy through its chairman, R. S. Woodward, made the following recommendations of general interest, which were adopted:

1. That the committee on policy should in the future consist of the president, the retiring president, the treasurer, the permanent secretary and five other members.

2. That any member of the affiliated societies joining the association during the year 1908 should have his admission fee remitted and that a letter stating this fact should be addressed to all members of affiliated societies not already members of the association.

3. That the four great engineering societies (Civil, Mechanical, Electrical and Mining) and also the American Medical Society be invited to send representatives to the council of the association, and that the chairman of the committee on policy and the permanent secretary be appointed a committee to conduct the necessary correspondence.

4. That hereafter the annual volume be greatly reduced in size by omitting addresses and abstracts, and confining it simply to a list of members, constitution and the business of the meeting, and to devote the sum saved, not to exceed $850, to additional clerical help for the permanent secretary.

5. That the sum of $500, presented by an unknown client of Mr. John L. Bissell, of New York City, to the association, be invested as a permanent fund, the income to be used for the general purposes of the association.

6. That the Committee of One Hundred on Public Health appointed by Section I of the association be made a committee of the association.

7. That the council adopt a resolution concerning a pension for the widow of the late James Carroll, the said resolution to be formulated by Messrs. Welch and Howard.

8. That the council approve the application of the American Federation of Teachers of the Mathematical and Natural Sciences for affiliation with the association.

9. That the council authorize a committee to consider the feasibility of a plan suggested by Mr. Newcomb concerning the advisability of the publication of reports of progress similar to those published by the British Association.

10. That the association look forward to the time when it shall employ a permanent secretary who may devote his full time to the work of the association and who shall receive an adequate salary.

11. That the committee on the relations of the association with the

journal *Science* be discharged, and that a standing committee of three on organization and membership be appointed by the president.

One of the most earnestly discussed matters at the Chicago meeting was the relation of the association with the affiliated societies. The council reaffirmed its action taken at the Philadelphia meeting permitting sectional committees to dispense with a sectional program whenever an affiliated society meets with the section, and to turn over all technical papers to a joint program of the society and the section. In discussing this question there appeared a wide divergence of opinion as to what action was *immediately* necessary. There was reported from some of the sections a strong sentiment in favor of making this action mandatory rather than permissive. The reaffirmation was accepted as a temporary expedient, and a resolution was adopted instructing the officers of sections to confer with the officers of the corresponding societies usually meeting in affiliation with reference to programs and policy, and to report to the permanent secretary for presentation to the council at the next meeting of the association.

The importance both to the association and to science of the proper solution of this problem of affiliation was clearly recognized. Conditions influencing it are different in the case of different sections, and some degree of patience and of toleration on the part of all concerned is called for during the effort to work it out. At Chicago, the relations between the sections and the societies were of the most cordial nature, and this condition augurs well for the effort to arrive at a better working arrangement.

In accordance with various resolutions of the council the following committees were appointed by the president:

Additional members of the Committee on Policy, Messrs. Wm. H. Welch and N. L. Britton.

On preservation of the national resources, Messrs. T. C. Chamberlin, Irving Fisher, M. T. Bogert, W. F. M. Goss and Gifford Pinchot.

On organization and membership, Messrs. R. S. Woodward, L. O. Howard, and J. McK. Cattell.

Section C appointed a committee to look into the question whether the report adopted by the section some years ago regarding the spelling of chemical terms represents the best present usage, or now has the endorsement of the section. The committee named consists of Messrs. W. A. Noyes, Chairman, L. P. Kinnicutt and C. L. Parsons.

In accordance with the recommendation of the Committee on Grants there was granted $100.00 to the Concilium Bibliographicum and $100.00 to the Committee on Cave Fauna. An appropriation of $50.00 from the general fund was made to pay the expenses of the committee on seismology.

The general committee fixed the place of the next regular meeting at Baltimore and the time Convocation Week 1908-9. It also voted to hold a summer meeting, probably during the week beginning June 28, 1908, at Dartmouth College, Hanover, N. H.

F. W. McNair,
General Secretary.

REPORT OF THE TREASURER.

In compliance with Article 15 of the Constitution, and by direction of the Council, I have the honor to submit the following report, showing receipts, disbursements and disposition of funds of the Association for the year ending December 31, 1907.

Receipts have come into the keeping of the Treasurer from two sources, namely, from interest on invested funds and from Life Membership commutations. The total amount of these receipts is $1,877.31.

Disbursements made in accordance with the directions of the Council amount to $769.26.

The total amount of funds of the Association deposited in banks and subject to the order of the Treasurer, December 31, 1907, is $17,743.45.

The details of receipts, disbursements and disposition of funds are shown in the following itemized statement.

Dated April 15, 1908.

THE TREASURER IN ACCOUNT WITH THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

1907.	DR.		
Jan. 1.	To balance from last account		$16,635.40
Apr. 6.	To 26 Life Membership commutations		1,300.00
Dec. 31.	To interest received from funds deposited in banks as follows:		
	From Cambridge Savings Bank, Cambridge, Mass	$40.32	
	From Emigrant Industrial Savings Bank, New York, N. Y	119.92	
	From Metropolitan Savings Bank, New York, N. Y	117.92	
	From Union Square Savings Bank, New York, N. Y	102.26	
	From U. S. Trust Company, New York, N. Y	172.50	
	From International Banking Corporation, Washington, D. C	24.39	
			577.31
	Total		$18,512.71

THE TREASURER IN ACCOUNT WITH THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

1907.		CR.		
Jan. 22.	By grant paid to J. Arthur Harris			$100.00
March 2.	By grant paid to Charles L. Parsons			200.00
April 4.	By interest on Life Memberships paid to Permanent Secretary			269.26
May 28.	By grant paid to Concilium Bibliographicum			100.00
June 1.	By grant paid to Frederic E. Clements			100.00
Dec. 31.	By cash on deposit in banks as follows:			
	In Cambridge Savings Bank, Cambridge, Mass	$1,038.48		
	In Emigrant Industrial Savings Bank, New York, N. Y	3,116.64		
	In Metropolitan Savings Bank, New York, N. Y	3,036.93		
	In Union Square Savings Bank, New York, N. Y	2,927.76		
	In U. S. Trust Company, New York, N. Y	6,172.50		
	In International Banking Corporation, Washington, D. C	1,224.39		
	In Fifth Avenue Bank of New York	226.75		
				17,743.45
	Total			$18,512.71

I hereby certify that the foregoing account is correctly cast and properly vouched.

THEO. N. GILL,
Auditor.

L. O. HOWARD, PERMANENT SECRETARY, IN
TION FOR THE ADVANCE-
From January 3, 1907, *to*

DR.

To balance from last account		$9,789.19
Admission fees	$3,825.00	
Annual dues, 1907	5,699.00	
Annual dues, 1908	9,440.00	
Annual dues, previous years	307.00	
Life membership fees	1,469.00	
		20,740.00
Publications	$11.60	
Binding	4.00	
Miscellaneous receipts including gifts, interest, etc	883.10	
		898.70
		$31,427.89

ACCOUNT WITH THE AMERICAN ASSOCIAMENT OF SCIENCE.
January 6, 1908.

CR.

By publications:		
To publishers Science	$8,338.00	
Author's extras	155.25	
Preliminary announcements (New York and Chicago	298.87	
New York pamphlet	154.45	
New York program	193.20	
Balance on Vol. LV	297.15	
		$9,436.92
By expenses (part) New York and (part) Chicago meetings:		
Secretaries expenses and commutation	$762.44	
Stenographers, clerks and general expenses	313.41	
		1,075.85
By general expenses, including propaganda:		
Postage	$866.90	
Express and telegrams	45.95	
Extra clerical help	226.02	
Expenses of circularizing American Chemical Society	112.57	
Circulars, forms, stationery, and office supplies	351.00	
		1,602.44
By moving back volumes New York to Washington, installing same, and moving effects Boston to Washington:		
Packing, and moving books from Columbia University to Penna. R. R.	$87.60	
Freight to Washington and transfer to Smithsonian Institution	164.69	
Preparing storage room, labor, shelving, etc.	119.50	
Packing boxes and moving effects from Boston	59.03	
Transfer Washington	9.83	
		440.65
By salaries:		
Permanent Secretary	$1,500.00	
Assistant Secretary	750.00	
Assistant Secretary	130.00	
		2,380.00
By miscellaneous disbursements:		
Transferred to treasurer	$1,300.00	
Overpaid dues returned and cheques returned by bank	42.00	
Walter Reed Memorial fund	100.00	
Darwin Memorial committee	6.50	
		1,448.50
By balance to new account		15,043.53
		$31,427.89

I hereby certify that I have examined this account, and that it is correctly cast and properly vouched for. The balance of $15,043.53 was on deposit with the following Washington institutions:

American National Bank	$9,905.56
National Savings and rust Company	1,180.78
American Security and Trust Company	3,957.19

THEO. N. GILL,
Auditor.

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